Management Services in Government

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Supplement to

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Computer Installations for Government Departments

Civil Service Department,
Central Computer Agency

Preface

Information about computers used by Government Departments for administrative and general, and scientific and technical purposes is published annually with the May issue of MANAGEMENT SERVICES IN GOVERNMENT; particulars of further orders are given in other quarterly editions.

Details of computers for administrative and general purposes installed and on order at 1st January 1974 are shown in Tables 1A and 1B, and similar information about computers for scientific and technical purposes is given at Tables 2A and 2B. Computers for scientific control systems and flight simulators are not included.

A computer for inclusion in these tables must:

(*a*) Operate under stored program control and use wholly digital representation.
(*b*) Cost at least £10,000.
(*c*) Not form part of processor-controlled keying equipment.

The total of computers installed for administrative and general purposes is 129, and a further 12 are on order. Corresponding figures for computers installed for scientific and technical purposes are 109 and 17.

Keys to the abbreviations used under 'Department' (*column* 2) and 'Manufacturer' (*column* 5) are included at the last page.

1A Computers for administrative and general purposes installed in Departments before 31st December, 1973

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
January 1962	MOD (Navy)	Copenacre	Civil pay and stores	ICL 1100
September 1963	Customs and Excise	Southend	Pay; statistics; accounts	ICL LEO III
December 1963	HO and Met. Pol.	London	Pay and statistics	ICL 1301
January 1964	MOD (Army)	Donnington	Stores control	ICL 2400
December 1964	ECGD	London	Statistics and accounts	IBM 1401G
April 1965	MOD (Air)	Hendon	Stores	2 × AEI 1010
May 1965	MOD (Air)	Innsworth	Pay and records	Univac 1107
November 1965	Inland Revenue	East Kilbride	Tax collecting and accounting	Gamma 10
February 1966	DOE	Hastings	Payroll, costing, stores, statistics, etc.	ICL 1302
April 1966	MOD (PE)	Liverpool	Bill paying	NCR 315
April 1966	DOE	Hastings	Payroll, costing and production control	ICL 1302
April 1966	DNS	Lytham St. Annes	Premium Savings Bonds and Stocks	ICL LEO 326
May 1966	Scottish Office	Edinburgh	General ADP in Scotland	IBM 360/40
August 1966	MOD (Central)	Devonport	Payroll and costing	ICL LEO III
January 1967	MOD (Navy)	Copenacre	Stores control	Univac 492
February 1967	MOD (Navy)	Eaglescliffe	Stores control	Univac 492
February 1967	MOD (Army)	Glascoed	Stock control, costing and payroll	NCR 500
April 1967	MOD (Navy)	Faslane	Naval stores	ICL 4120
April 1967	MOD (Army)	Glascoed	Stock control, costing and payroll	NCR 500
April 1967	FCO/ODA	London	Pay, pensions and accounts	NCR 500
May 1967	MOD (Army)	Woolwich	Reliability studies	ICL 1904
July 1967	HO and Met. Pol.	London	Pay and statistics	ICL 1301
July 1967	FCO/ODA	London	Pay, pensions and accounts	NCR 500

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
September 1967	DHSS	Reading	Payment of unemployment benefit	ICL 1904
October 1967	MOD (Central)	Chatham	Payroll and costing	ICL LEO 360
November 1967	MOD (PE)	Farnborough	General purpose, research and administration	ICL 1907
November 1967	MOD (Central)	Portsmouth	Payroll and costing	ICL LEO 360
December 1967	MOD (Central)	Rosyth	Payroll and costing	ICL LEO III
February 1968	DHSS	Fleetwood	NHS superannuation and statistics	ICL 4120
February 1968	DHSS	Newcastle	Pension payments and statistics	ICL 4/50
February 1968	DHSS	Reading	Payment of unemployment benefit	ICL 1906
April 1968	MAFF	Guildford	Subsidy payments, payroll, statistics	ICL 1907
May 1968	HO and Met. Pol.	London	Bureau work for HO and Met. Pol. including traffic tickets and prison index	ICL 1905E
June 1968	MOD (Air)	Quedgeley	Stock control	ICL 1903
July 1968	MOD (Air)	Hartlebury	Stock control	ICL 1903
July 1968	CSD	Norwich	Bureau work	ICL 1904E
July 1968	PGO	Crawley	Pension payments and banking	ICL 4/50
August 1968	MOD (Navy)	Faslane	Naval stores	ICL 4120
August 1968	MOD (Army)	BAOR	Records, statistics and pay	ICL 1902S
September 1968	MOD (Central)	Cheadle Hulme	Punched card processing	ICL 1901
September 1968	DES	Darlington	Education statistics	ICL 1905E (Enhancement)
November 1968	MOD (Army)	Blackburn	Production control, costing and payroll	ICL 1902A
January 1969	MOD (Army)	Glascoed	Payroll, stock control, costing	2 × NCR 500
February 1969	MOD (Air)	Hendon	Stores	AEI 1010 (Second-hand)
February 1969	DHSS	Newcastle	Pension payments; pay and statistics; family allowances	ICL 4/70
February 1969	Scottish Office	Edinburgh	Vote accounting	NCR 500
May 1969	MOD (Army)	Donnington	Stock control	ICL 1901

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
May 1969	DHSS	Newcastle	Pension payments; pay and statistics; family allowances	ICL 4/70
May 1969	CSD	Norwich	Bureau work	ICL 1907F
June 1969	MOD (Navy)	Gosport	Naval pay and records	ICL 1904E
June 1969	DHSS	Newcastle	Short-term benefits reconciliation	ICL 1901
July 1969	DTI	Eastcote	Business Statistics Office	ICL 1905E
September 1969	MOD (Central)	Hullavington	Stores codification and cataloguing	ICL 1904E
November 1969	DNS	Glasgow	Savings Bank	ICL LEO 326
March 1970	CSO	London	Statistical research and program development	ICL 1901S
March 1970	MOD (Central)	Cheadle Hulme	Industrial civil pay and records	ICL 1904E
April 1970	DOE	London	Financial statistics	ICL 1901 (Second-hand)
May 1970	MOD (PE)	Malvern	Research in non-numerical analysis and work for secretariat	ICL 1907F
June 1970	DHSS	Fleetwood	NHS superannuation and statistics	ICL 4120
July 1970	DE	Runcorn	Pay and statistics	ICL 1904F
August 1970	MOD (Army)	Worthy Down	Pay and records of Army personnel	IBM 360/50
August 1970	MOD (Central)	Cheadle Hulme	Industrial civil pay and records	ICL 1904E
September 1970	DNS	Glasgow	Savings Bank	ICL LEO 326
October 1970	MOD (Central)	Liverpool	Bill paying	2 × Philips Data 8000
December 1970	MOD (Central)	Liverpool	Bill paying	2 × Philips Data 8000
January 1971	MAFF	Guildford	Pay and statistics	ICL 1903A
February 1971	OPCS	Titchfield	Statistics	IBM 360/25
February 1971	MOD (Air)	Swanton Morley	Technical maintenance data	ICL 1904A
February 1971	MOD (Army)	Chorley	Payroll and accounting	ICL 1902A
March 1971	MOD (Central)	Bath	Non-industrial civil pay and records	ICL 1904A
March 1971	OPCS	Titchfield	National Census data	ICL 1904A

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
March 1971	Inland Revenue	Liverpool	PAYE centralization	ICL 1904A
April 1971	MOD (Army)	Woolwich	Reliability studies	ICL 1903 (Second-hand)
April 1971	Ordnance Survey	Southampton	General purpose, administration and surveying	ICL 1904 (Second-hand)
May 1971	DOE	Swansea	Vehicle registration and licensing; driver licensing	ICL 4/70
May 1971	MOD (Army)	Bicester	Stock and ammunition control	ICL 1906F
May 1971	Scottish Office	Edinburgh	Bureau work	IBM 360/50
June 1971	PGO	Crawley	Banking and pensions work	ICL 4/50
July 1971	MOD (Army)	Worthy Down	Pay and records of Army personnel	IBM 360/50
October 1971	DTI	Newport	Trade census statistics and Business Statistics Office	ICL 1906A
October 1971	MOD (Air)	Stafford	Stock control	ICL 1903A (Enhancement)
October 1971	MOD (Air)	Carlisle	Stock control	ICL 1903A (Enhancement)
October 1971	MOD (Navy)	Rosyth	Stock control	ICL 1904A
November 1971	Customs and Excise	Southend	VAT, pay, statistics, accounts	ICL 4/50 (Second-hand)
December 1971	MOD (Navy)	Chatham	Stock control	ICL 1904A
December 1971	MOD (Army)	Bicester	Stock and ammunition control	ICL 1906A
December 1971	MOD (Navy)	Llangennech	Air stores	IBM 360/25
January 1972	MOD (PE)	Farnborough	General purpose, research and administration	ICL 1904A
February 1972	DHSS	Newcastle	Contribution records and graduated benefits	ICL 1906A
February 1972	MOD (Navy)	Devonport	Stock control	ICL 1904A
February 1972	Inland Revenue	Worthing	Control of payments, payroll, statistics, etc.	ICL 1904A
March 1972	DOE	Hemel Hempstead	Road accident statistics	ICL 1901A

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
March 1972	MOD (Navy)	Portsmouth	Stock control	ICL 1902S
April 1972	ECGD	London	Statistics, accounts, bank guarantees and long-term credits	IBM 1401B (Second-hand)
May 1972	MOD (Central)	London	Bureau work	ICL 1907F
June 1972	DNS	Glasgow	Savings Bank	ICL 4/72
July 1972	Home Office	Hendon	Police records	2 × Burroughs 6700
July 1972	DHSS	London	Statistics	ICL 1901A
August 1972	MOD (Army)	BAOR	Stores	ICL 1902S
August 1972	MOD (Navy)	Ensleigh	Naval victualling and armament stock control	ICL 1906A
August 1972	DHSS	Newcastle	Contribution records and graduated benefits	ICL 1906A
August 1972	Customs and Excise	Southend	VAT	ICL 4/72
August 1972	PWLB	London	Loan repayments	ICL 1901A
October 1972	MOD (Air)	Hendon	Stores	ICL 4/72
November 1972	DE	Runcorn	Pay; statistics; Professional and Executive Register	ICL 1904A
December 1972	DOE	Swansea	Vehicle registration and licensing; driver licensing	ICL 4/72
January 1973	HO and Met. Pol.	London	Pay; statistics; traffic tickets and prison records	ICL 1904A
February 1973	DOE	Swansea	Cheque reading and sorting for central licensing system	IBM System 3
February 1973	MOD (Navy)	Faslane	Stock control	ICL 1903A (Enhancement)
March 1973	MOD (Air)	Hendon	Stores	ICL 4/72
March 1973	CSD	Chessington	Payroll, accounting and staff records	ICL 1904S

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
March 1973	DOE	Hastings	General purposes, payroll, bill-paying, stores, statistics, etc.	ICL 1906A
March 1973	Customs and Excise	Southend	Cheque reading and sorting for VAT scheme	IBM System 3
June 1973	CSD	Chessington	PRISM	ICL 1904S
June 1973	Land Registry	Plymouth	Index of charges	IBM 370/145
August 1973	MOD (Navy)	Taunton	Stock control and analysis of oceanographic data	ICL 1903A (Enhancement)
August 1973	DHSS	Reading	Unemployment benefit payments	2 × ICL 1904S
September 1973	DHSS	Newcastle	Graduated Pensions records	ICL 1906A
October 1973	Cabinet Office/ Treasury	London	Econometric modelling, statistical research, etc.	Univac 1106
October 1973	DOE	Swansea	Vehicle registration and licensing	ICL 4/72
October 1973	GRO (Scotland)	Edinburgh	Population statistics	ICL 1902A
December 1973	Inland Revenue	East Kilbride	PAYE assessment for Scotland	ICL 1904S
December 1973	DNS	Lytham St. Annes	Premium Savings Bonds and Stocks	ICL 4/72

1B Computers for administrative and general purposes on order as at 1st January, 1974

DATE OF ORDER	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
August 1970	DNS	Glasgow	Savings Bank	ICL 4/72
November 1971	MOD (Army)	BAOR	Stock control	Unidata MAC 16
April 1972	DES	Darlington	Education statistics	ICL 1906A
August 1972	DHSS	Livingston	Unemployment benefits: Centre 2	2 × ICL 1904S
September 1972	MOD (Army)	Hong Kong	RAOC stores, etc.	ICL 1902A
April 1973	British Museum	London	Information retrieval	Hewlett Packard 2100A
July 1973	DHSS	Reading	Short-term benefits	BCL Molecular 18
July 1973	Posts and Telecomms	London	Allocation of frequencies	CDL 17
August 1973	DHSS	Fleetwood	General work for Blackpool Central Office	ICL 1904S
September 1973	DHSS	Newcastle	Pensions, statistics and family allowances	ICL 4/72
October 1973	OPCS	Titchfield	Population statistics, census and survey analysis	ICL 1906S

2A Computers for scientific and technical purposes installed in Departments before 31st December, 1973

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
November 1961	MOD (PE)	Malvern	Proving data extension programs; reliability testing	ICL 803B
April 1962	MOD (Army)	Arborfield	Training	ICL 803B
November 1962	MOD (PE)	Pyestock	Scientific and mathematical applications	ICL 803B
March 1963	MOD (Navy)	Bath	Ship design	ICL Sirius
January 1964	MOD (Army)	Sandhurst	Research and instruction	ICL 803B
May 1964	MOD (PE)	Christchurch	Signals research	Elliott 920A
July 1964	DTI	Teddington	Autonomics research	Ferranti Hermes
August 1964	DTI	Teddington	Scientific calculations	2 × ICL KDF 9
January 1965	MOD (Navy)	Teddington	Mathematical applications	ICL KDF 9
March 1965	MOD (PE)	Westcott	Thermochemical studies	ICL 503
July 1965	MOD (PE)	Boscombe Down	Scientific applications	ICL 503
July 1965	MOD (PE)	Malvern	Radar research	Elliott 920
August 1965	MOD (Air)	Bracknell	Weather forecasting and research	ICL KDF 9
November 1965	DTI	Teddington	Display research and spectrometry	Elliott 903B
December 1965	MOD (Army)	Chatham	Training	ICL 803 (Second-hand)
December 1965	MOD (Air)	Locking	Training	2 × ICL 803
January 1966	MOD (Air)	Locking	Training	ICL 803B
January 1966	MOD (PE)	Pyestock	Engine testing	DEC PDP7
March 1966	DTI	Teddington	Programming research	ICL 4120
April 1966	DTI	Glasgow	Machine tool design	Univac 1108
January 1967	MOD (Navy)	Frimley	Underwater weapons research	Elliott 920B

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
February 1967	MOD (Navy)	Coulport	Engineering test instrument control	ICL 803B
February 1967	MOD (PE)	Pyestock	Analysis of engine tests; general scientific work	SDS 9300
February 1967	MOD (Air)	Cranwell	Training and research	ICL 4120
May 1967	MOD (PE)	Malvern	Air traffic control research	Marconi-Myriad
May 1967	MOD (Navy)	Derby	Engineering calibration and measurement	SDS 90/2
June 1967	MOD (PE)	Christchurch	Signals research	Elliott 920B
June 1967	MOD (Navy)	Manadon	Engineering training	IBM 1130
July 1967	MOD (PE)	Christchurch	Data reductions and scientific use	ICL 4130
November 1967	MOD (PE)	Malvern	Radar research	DEC PDP 7
November 1967	MOD (PE)	London	Aircraft performance calculations	ICL 1901
January 1968	MOD (Army)	Blandford	Computer training and research	ICL 1903S
January 1968	MOD (Navy)	Teddington	Extension to ICL KDF 9 installation	DEC PDP 8
February 1968	DTI	Teddington	On-line recording	DEC PDP 8
March 1968	MOD (PE)	Malvern	Radar research	DEC PDP 9
May 1968	MOD (PE)	Bedford	Kine-theodolite systems	ICL 4130
May 1968	MOD (Navy)	Haslar	Hydro-dynamic research	IBM 1131
July 1968	DOE	Watford	Combined use for Building and Fire Research Stations, Warren Spring and Water Pollution Research Laboratories	ICL 1905E
September 1968	MOD (PE)	Farnborough	Data acquisition system	Honeywell DDP 516
October 1968	DTI	Cambridge	Development of computer-aided design facility	DEC PDP 9
October 1968	MOD (PE)	Malvern	Circuit research	ICL 4130
October 1968	MOD (PE)	Fleet	Instrumental analysis	Honeywell DDP 516

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
October 1968	MOD (Navy)	Survey Ships	Data logging and preliminary analysis of oceanographic data	2 × Elliott 920B
December 1968	MOD (PE)	Farnborough	Flight control systems	IBM 1130
January 1969	DAFS	Aberdeen	Programming research	Elliott 903C (Second-hand)
February 1969	MOD (PE)	Waltham Abbey	Data processing and process control	Elliott 903C (Second-hand)
March 1969	DTI	Cambridge	Development of computer-aided design facility	ICL Atlas II
March 1969	DTI	Teddington	Message switching research	Honeywell DDP 516
March 1969	DAFS	Aberdeen	Data logging	Elliott 920C
April 1969	DTI	Teddington	Aerodynamics research	Honeywell DDP 516
May 1969	MOD (Navy)	Survey Ships	Data logging and preliminary analysis of oceanographic data	Elliott 920B
June 1969	Home Office	London	Statistical analysis	IBM 1130
July 1969	DTI	Teddington	Pattern processing research	Honeywell DDP 516
July 1969	MOD (Navy)	Greenwich	Training and research in nuclear science	IBM 1130
July 1969	DOE	Crowthorne	General scientific work and road research	ICL 4/70
September 1969	DTI	Teddington	Scientific research	ICL KDF 9
November 1969	DTI	Stevenage	Research into the control of fast reactions using a transfer line reactor	Ferranti Argus 500 Mk II
December 1969	MOD (Army)	Feltham	Survey and cartographic calculations	ICL 1902A
December 1969	DTI	Teddington	Communication control	Honeywell DDP 516
December 1969	DTI	Cambridge	Development of computer-aided design facility	2 × Computer Technology Modular 1
January 1970	DHSS	Roehampton	Biomechanical research	Elliott 905
March 1970	DTI	Teddington	Display research and spectrometry	Elliott 905

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
May 1970	MOD (PE)	Bedford	Wind tunnel and flight data analysis and general scientific computing	ICL 4130
May 1970	MOD (PE)	Bedford	Wind tunnel data	Honeywell DDP 516
May 1970	MOD (PE)	Malvern	Radar research	DEC PDP 8
August 1970	MOD (Central)	West Byfleet	Operational research; war games	ICL 1907E
September 1970	MOD (Navy)	Dunfermline	Ship design calculations	IBM 1130
October 1970	MOD (Navy)	Fareham	Instruction	IBM 1130
November 1970	DOE	London	Construction analysis and design	IBM 1130
November 1970	MOD (Army)	Chertsey	Calculations for vehicle research and development	DEC PDP 9/L
January 1971	DOE	Reading	Hydrometric data processing	ICL 1902A
January 1971	DTI	Teddington	Remote file storage	Honeywell DDP 516
February 1971	MOD (Navy)	Taunton	Scientific calculations, chart issues, etc.	ICL 1903A
February 1971	DTI	Teddington	Man/machine interaction research	Computer Technology Modular I
March 1971	MAFF	Aberdeen	Data logging analysis; general scientific work	IBM 1130
April 1971	MOD (PE)	Boscombe Down	Magnetic tape replay/display system	Honeywell DDP 516
May 1971	MOD (PE)	Malvern	Display research	Computer Technology Modular I
May 1971	Forestry Commission	Fareham	General scientific computing	IBM 1130
July 1971	MOD (PE)	Farnborough	Scientific and mathematical work	Honeywell DDP 516
September 1971	DTI	Feltham	Scientific applications	Honeywell DDP 516
September 1971	MOD (Air)	Northwood	Analysis of aircraft data	ICL 1902A
October 1971	HO and Met. Pol.	London	Fingerprint retrieval research project	Ferranti Argus 500
November 1971	MOD (Navy)	Portland	Bureau computing facilities for research and development	ICL 1904A

ACCEPTANCE DATE	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
November 1971	DTI	Teddington	Aerodynamics wind tunnel instrumentation	Honeywell DDP 516
November 1971	MOD (Army)	Shrivenham	Instruction and research	ICL 1903A (Enhancement)
December 1971	MOD (Air)	Bracknell	Meteorological research and forecasting	IBM 360/195
December 1971	MOD (PE)	Malvern	Scientific research	Computer Technology Modular I
January 1972	MOD (Navy)	Portsdown (Cosham)	General research	Elliott 905
January 1972	MOD (PE)	Westcott	Scientific applications	IBM 1130
February 1972	MOD (Army)	Porton Down	Diffusion experiments; microbiological work	ICL 1905 (Second-hand)
March 1972	DTI	Stevenage	General research	ICL 1903 (Enhancement)
May 1972	DTI	Teddington	Disc file system	Honeywell DDP 516
May 1972	DTI	Feltham	Remote job entry	Hewlett Packard 2100A
May 1972	DTI	Cambridge	Communications project	DEC PDP 11/20
June 1972	DTI	Teddington	Graphic editing	DEC PDP 11/20
June 1972	DOE	Crowthorne	Conversion of data from recording devices	Hewlett Packard 2100
August 1972	MOD (PE)	Westcott	Scientific applications	DEC PDP 11/20
October 1972	MOD (Air)	High Wycombe	Command and control tasks	ICL 1904A
November 1972	DHSS	London	Computer aids to hospital building	Elliott 905
February 1973	MOD (PE)	Pyestock	General scientific computing	DEC PDP 11/21
March 1973	MOD (PE)	Farnborough	Analysis of airworthiness data	Honeywell DDP 516
March 1973	DAFS	Aberdeen	Fishery research data logging	Elliott 905
May 1973	MOD (PE)	Teddington	Development of computer-aided ship design systems	DEC PDP 11/45
November 1973	DOE	Borehamwood	Fire statistics; scientific calculations	ICL 1902A
December 1973	DTI	Teddington	Experiment research information service	Computer Technology Modular I

2B Computers for scientific and technical purposes on order as at 1st January, 1974

DATE OF ORDER	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
October 1972	MOD (PE)	Farnborough	Scientific applications; signal processing	Hewlett Packard 2100A/15
November 1972	MOD (PE)	Farnborough	General scientific computing	DEC PDP 11/21
January 1973	DTI	Teddington	Scientific research	Honeywell DDP 516
February 1973	MOD (Army)	Chertsey	Vehicle research	ICL 1903T
April 1973	MOD (Army)	Blandford	Signals training	Hewlett Packard 3000A
May 1973	MOD (PE)	Malvern	Digital data collection	DEC PDP 15/20
June 1973	MOD (PE)	Farnborough	General scientific computing	ICL 1906S
June 1973	MOD (PE)	Fort Halstead	Scientific applications	ICL 1906A
June 1973	MOD (PE)	Farnborough	Research	DEC PDP 11/45
August 1973	MOD (Air)	Bracknell	Research on data from weather instruments	DEC PDP 11/40
August 1973	MOD (Navy)	Manadon	Training	Sigma 6
August 1973	MOD (PE)	Westcott	Scientific applications	ICL 1904S
October 1973	MOD (PE)	Boscombe Down	Scientific applications	Sigma 6
November 1973	MOD (Navy)	Cobham	Scientific applications	Varian 620/L
November 1973	MOD (PE)	Farnborough	Research into human factor problems	Varian 620/L
November 1973	MOD (Navy)	Coulport	Equipment testing	Computer Technology Modular I
December 1973	MOD (PE)	Farnborough	Intelligent terminal	Computer Technology Modular I

[1] **Department Key** (*Column 2*)

CSD	Civil Service Department
CSO	Central Statistical Office
DAFS	Department of Agriculture and Fisheries for Scotland
DE	Department of Employment
DES	Department of Education and Science
DHSS	Department of Health and Social Security
DNS	Department for National Savings
DOE	Department of the Environment
DTI	Department of Trade and Industry
ECGD	Export Credits Guarantee Department
FCO/ODA	Foreign and Commonwealth Office/Overseas Development Administration
GRO (Scotland) ..	General Register Office (Scotland)
HO and Met. Pol. ..	Home Office and Metropolitan Police
MAFF	Ministry of Agriculture, Fisheries and Food
MOD (Air), (Army), (Central), (Navy), (PE)	Ministry of Defence (Air), (Army), (Central), (Navy), (Procurement Executive)
OPCS	Office of Population Censuses and Surveys
PGO	Paymaster General's Office
Posts & Telecomms ..	Ministry of Posts and Telecommunications
PWLB	Public Works Loan Board

[2] **Manufacturer Key** (*Column 5*)

AEI	GEC-AEI (Automation) Ltd.
BCL	Business Computers Ltd.
Burroughs	Burroughs Machines Ltd.
CDL	Control Data Ltd.
Computer Technology	Computer Technology Ltd.
DEC	Digital Equipment Company (UK) Ltd.
Elliott	Elliott Bros. (London) Ltd.
Ferranti	Ferranti Ltd.
†GEC	GEC-AEI (Automation) Ltd.
Hewlett Packard ..	Hewlett Packard Ltd.
Honeywell	Honeywell Information Systems Ltd.
IBM	International Business Machines (UK) Ltd.
ICL	International Computers Ltd.
Marconi	Marconi-Elliott Computer Systems Ltd.
NCR	National Cash Register Co. Ltd.
Philips	Philips Electrologica Ltd.
SDS	Scientific Data Systems Inc.
Sigma	Rank-Xerox Ltd.
Unidata	Unidata Ltd.
Univac	Sperry Rand Ltd. (Univac Division)
Varian	Varian Associates

† Includes De La Rue Gamma 10 computers.

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Supplement
Computer Installations for Government Departments

Some Thoughts on Planning in the Civil Service

Part 1 – The Wood

S. D. WALKER, Civil Service Department

> *Planning.* Determining the things to be done and the sequence in which they should be done in order to achieve a given end.

What is there to write about?

In a recent article in this journal,* Lord Brown advocated precision in the use of management terms. I doubt if this present article will succeed in suggesting a specific definition for the term planning, but it may serve to illustrate the extraordinary range of activities which can be subsumed within this term and thus support his plea for a stricter semantic discipline.

There are some aspects of planning which I shall not seek to cover. They include planning techniques and planning systems (though some of these may receive a passing reference); the information needs appropriate to the immense variety of planning activities which are encountered; the scope for designing information systems and for using modelling techniques, or the dangers of assuming too readily that all 'bricks of information' are equally relevant to the needs of different planning activities as well as to those of control.

I shall also take for granted that planning in a management context arises at all levels of management; that it may take different forms at different levels; that lower levels will contribute to planning at higher levels; and, having noted the point at the outset, I do not intend to discuss further those important and fascinating distinctions between 'line' and 'staff' and their particular relevance to planning. (How often is the person who collects and analyses information for management not only referred to as the planner, but for that reason confused with the decision-taker?) And I shall say nothing about the overriding desirability of involvement in the planning process; of good communications and of other means of seeking commitment to the outcome of the planning process. You may ask what is left to write about. The answer is the word 'planning' itself. I do not believe that there can be any constructive discussion of the development of systems and information flows or of the need for involvement without a framework of understanding about the word planning. And before you have time to react by thinking that I ought really to read the textbook definitions

* *Let's be precise*, February 1973 edition.

and all the literature on strategic and long-range planning I hasten to add that it is part of my purpose to demonstrate that they do not adequately cover and define what I am talking about. In brief, therefore, my purpose is to suggest a framework for distinguishing and describing at least some of the activities which commonly fall under the label 'planning' in the Civil Service.

The planning 'framework'

Tim Plumptre is a Canadian civil servant who recently worked with CSD Management Services for several months and helped us to consider the relevance of strategic planning to the public sector. He noted that much of the literature on planning assumed that the planning activity took place within, and was related to, the future of an organization. It might be an industrial or commercial company; or it might be any organizational unit forming an entity for purposes of management; the common feature was that the organization itself constituted the conceptual framework of the planning activity. He also noted that many planning terms were used interchangeably. For example, the terms 'strategic', 'corporate' and 'long-term' are sometimes used to describe similar planning processes so that we have different terms being used to mean the same thing.

Tim Plumptre concluded that much of the confusion in terminology could be traced to a failure to distinguish between the framework which is the subject of the planning activity and the type of planning being undertaken within that framework. The need first to define the framework of the planning activity is of general significance and of particular importance in the public sector situation. Most planning in the private sector is concerned with internal company operations and the relationship between the company and its environment: its purpose is to ensure the survival and growth of the organization and its resources. The company is the subject of the planning activity, and planning and control therefore proceed in the context of a management unit. Where, however, the framework for planning extends beyond the boundaries of an organizational unit forming a management entity, the usual assumptions about planning and control require modification.

Even within the private sector there seems to be a need for more precision in terminology. Such terms as 'strategic' and 'long-term' have little meaning in the absence of knowledge of the context in which they are used. A convention appears to be developing that strategic planning should be reserved for total company planning. If this convention is followed, some other description is required to refer to planning activities which have similar time scales and whose scope encompasses the totality of some smaller organizational unit within the company. The point is particularly well demonstrated if one considers an international corporation with national components each comprising individual operating companies sub-divided into divisional units!

The term 'long-term' also requires some explanation. Strategic

planning as discussed above may cover a time scale of several years, but the time scale is likely to vary with the nature of the business: moreover, strategic planning will normally include the process of determining strategic objectives and plans for the immediate year ahead. If the term 'strategic' is reserved for planning which encompasses the totality of the company's aims and activities, it is obvious that 'long-term' planning may fairly be used to describe some different aspect of planning. To take one example, large-scale capital investments may have long-term implications and therefore involve long-term planning notwithstanding that their planning forms only a part of overall or strategic planning.

Our Canadian colleague further developed these thoughts and wrote a most interesting paper. For the purpose of this article it suffices to stress his main conclusions, namely that no meaningful discussion of planning can take place without first defining the planning framework: a term he uses to relate to 'the conceptual area, explicitly or implicitly delineated, in any planning exercise to which the activity of planning is to apply'. Once the framework has been delineated it becomes apparent whether there is a single organizational unit which is the subject of the planning activity and this, in turn, will alert the planner to the need to bear in mind the presence or absence of managerial and other control over the subject of the activity. It is also then possible to describe the particular type of planning by reference to such aspects as its scope and time scale.

'Planning' in the Civil Service

I find the concept of the planning framework immensely important in the context of the variety of activities which are sometimes included under the umbrella of public sector planning. To demonstrate its significance it may be helpful to group Civil Service planning activities under five broad headings. Each of these broad headings encompasses planning activities which have a variety of planning frameworks and which vary in scope and time scale. I have chosen the terms policy analysis, economic analysis, resource allocation, administrative policy planning, and management planning as convenient labels for the five headings, but I cannot claim that these terms meet the full requirements for precision: someone may be able to suggest alternatives. Before detailing the planning activities which I see as falling under each of these heads, may I remind the reader that I am, for simplicity, ignoring the 'levels' at which these planning activities occur and, therefore, the extent to which 'level' affects the nature of the activity.

● *Planning—Policy analysis.* To some extent each aspect of Government policy can be thought of as a separate 'business'. The aims or purposes of that policy have to be determined. The alternative strategies for achieving those aims have to be analysed and the preferred strategy selected. Within the broad aims and the chosen strategy, specific

objectives must be agreed consistent with the resources available. The success in achieving those objectives must be monitored and the continued relevance of the aims and the cost-effectiveness of the current strategy must be kept under review. It is, therefore, appropriate to observe that each policy area is amenable to the established management techniques often associated with strategic planning.

There are, however, significant differences between policy analysis and other forms of planning activity. The primary distinction between policy analysis in the public sector and strategic planning in a company is to be found in the definition of the planning framework. The subject of policy analysis in a Government Department, for example, is not the future growth of that Department: it is one or another aspect of the public good *outside* the Department. The framework for policy analysis may be international or national in scope or may relate to a particular aspect of the nation's affairs. Because the planning framework may be wide in scope, and because one policy may impinge upon another, policy analysis often involves more than one Department. Another difference is that Government policies cannot be evaluated in terms of profitability and that yardstick cannot be used, therefore, for judging effectiveness and efficiency nor for deciding the priorities and preferences as between competing policies; nor are there readily available many other yardsticks for these purposes.

The process of defining the framework for policy analysis is the essential basis for considering both the information requirements and the degree to which influence can be brought to bear upon those from whom information is required and upon whose co-operation successful achievement of policy aims and objectives is dependent. In most cases the framework for policy analysis is manifestly not an organizational unit amenable to managerial planning and control. This reason alone is sufficient justification for qualifying the word planning when it is used to describe the processes outlined above. I have suggested the term 'policy analysis' not only as a more precise description, but also to emphasize that, although clarification of aims and objectives and 'feedback' of information for review purposes are inherent in the process, this form of planning activity is significantly different from planning in a management framework. (It is, of course, true that the 'strategic planner' does not necessarily feel bound by his company's current organization. It is an entirely different proposition, however, to suggest that policy analysis can ignore the existing constitutional and social framework of society.)

● *Planning—Economic analysis.* It can be argued that economic policy is one aspect of Government policies and is, therefore, covered by the preceding section on policy analysis. This might, however, fail to give adequate recognition to the extent to which economic policies influence other policies in the private and public sectors. Moreover, many Government policies have direct or indirect economic effects. In

particular there are close links between economic analysis and the allocation of resources in the public sector. For the purpose of this article it may suffice to recognize that the term planning again requires qualification when we are considering the processes of forecasting trends in the economy and the impact upon it of particular policies. For the reasons noted above, the framework for this activity and the resultant limitations on managerial control certainly suggest that the concept of a national economic 'plan' cannot, in a democracy, be equated with the strategic plan of a company. These tentative observations are not intended to do justice to the importance of the subject nor to the sophisticated techniques which have been developed: they suggest only a description for the activity.

● *Planning—Resource allocation.* There are a number of separate strands under this heading. The PESC (Public Expenditure Survey Committee) processes (and the associated economic forecasts) can be regarded as a form of 'strategic' resource planning which assists in determining the ceiling on public sector expenditure and the major allocations to programmes. Other planning activities which fall under this head include manpower planning, programme budgeting, investment appraisal and the annual estimating procedures for Vote purposes. (As regards the last of these, it is interesting to note that, within the well-documented limitations of the Vote system, this is one area where planning is accompanied by an associated and very effective control system.)

Given the difficulties, already noted above, of establishing yardsticks for deciding priorities and preferences as between competing demands for resources, it is inevitable that resource allocation at some management levels will appear arbitrary or to be based primarily on incremental planning. This is an area of activity where Operational Research models are being developed to assist the decision-taker in the allocation both of financial and manpower resources. Here again the planning framework often extends beyond the boundaries of management units and involves considerations different from those governing the allocation of resources in industry and commerce.

● *Planning—Administrative policies.* I use the term 'administrative policies' to refer to the personnel management and other internal policies, rules and conventions which a company develops and within which its managers and staff operate. In the Civil Service we usually think of Government policies when the word policy is used rather than, for example, personnel management policies (notwithstanding that Ministers are, of course, concerned with personnel management policies).

Whatever term is preferred there is a close affinity between, for example, the processes for planning personnel policies and the processes envisaged above for policy analysis. The aims of personnel policies need to be clarified, the specific objectives determined and the effects of

current policies monitored. This is an example of an area of planning activity which stresses the unity of the Civil Service and establishes overall and uniform arrangements within which its work is conducted.

● *Management planning.* It will have been noted that my four preceding headings have sought to group and describe planning activities which may—and generally do—relate to conceptual frameworks transcending organizational boundaries. Within the management structure of departments (and of units and project teams within them), the management concepts have direct relevance. It is in the context of organizational units that the results of policy and economic analysis and of central resource allocation planning can be brought together for the purpose of management planning. There appears to be at least one major reservation, however. If the policies are wholly implemented by the staff of the Department, management planning and control systems can be developed on textbook lines. If, however, implementation is partly in the hands of organizations external to the Department and not managerially accountable to it, then, as noted above under policy analysis, there is no longer a simple managerial situation. The Department will undertake policy analysis and seek to monitor the effects of policies, but it cannot prepare a plan—in the full management sense—for implementation by bodies which do not form part of its operational structure or which are not accountable to it. The departmental analyses and decisions on resources will clearly influence the external bodies and will be a major constraint upon their internal planning, but there will be other influences which may, in some cases, be stronger.

The conclusions which I draw from this attempt to group and describe planning activities in the Civil Service can be briefly stated. The techniques of planning are applicable to both the private and the public sectors. To take a few examples, Operational Research modelling for planning and control, investment appraisal, cost benefit analysis and manpower planning are well developed in the Civil Service and are clearly relevant to its planning processes. The purpose and nature of planning must, however, always be related to the purposes and nature of the organizations by which it is undertaken, and all planning activity which is undertaken in the public sector needs first to be defined by reference to the conceptual framework to which it is to apply. Consequently the language and concepts developed for management planning in the private sector cannot be applied without appropriate modification to planning in the public sector except where a comparable management situation is the framework for the planning activity.

In the second part of this article I consider some of the steps which are being or might be taken by Departments to organize and co-ordinate the work of policy analysis, resource allocation and management planning.

Part 2 - Some of the Trees

Strategic planning. The highest level in the hierarchy of planning processes in any given framework and the one establishing fundamental aims: it may or may not relate to an organizational framework.

Corporate planning. A term applicable to organizational frameworks and designating planning that encompasses the total framework.

Strategic policy. A strategic plan which does not have an organizational framework as its prime focus.

(Some possible definitions based on proposals by Tim Plumptre.)

Introduction

In the first part of this article I suggested that planning activities in the Civil Service could be grouped under five broad headings: Policy Analysis, Economic Analysis, Resource Allocation, Administrative Policies and Management Planning. In this second part I discuss Policy Analysis, Resource Allocation and Management Planning, and offer a few thoughts on the organization of these planning activities at departmental level.

The terms which I have used in attempting to classify planning activities do not purport to be precise definitions. They are open to some criticism even in their more limited role as convenient labels. Thus 'policy analysis' may be thought to place an undue emphasis on the analytical processes and too little on synthesis and creativity. The phrase 'Planning: policy formulation and review' might be a more apt description of the processes which I have in mind, provided always that a distinction is drawn between the role of the decision-taker and that of his supporting staff.

Planning: Policy analysis

In Chapter 5 of Volume 1 of the Fulton Report there is a section on 'Policy Planning'.* It is clear from the wording of that section that the report was discussing aspects of what I have termed policy analysis. In suggesting the formation of departmental 'Planning Units' the report uses these words as an abbreviation for policy planning and research units; and it recognizes that many of the problems handled by such units will have implications extending beyond the boundaries of a single department. In general it can be assumed that Fulton was arguing that departments should establish adequate arrangements for obtaining and analysing relevant assumptions and data in order to improve the work of policy analysis. This is a worthy aim: nevertheless the particular proposals give rise to a number of questions of which the following are relevant to a discussion of the organization, at departmental level, of the work of policy analysis.

* Report of the Committee on the Civil Service 1966–68, Volume 1, paras. 172–177, Cmnd. 3638.

Fulton proposed that a department's responsibility for major long-term policy planning 'should be clearly allocated to a planning and research unit staffed by comparatively young men and women'. Such a proposal brings to mind a paragraph by John Garrett in *The Management of Government*. In discussing corporate planning he writes:

> Time and again, attempts to introduce corporate planning have failed because the board of directors have never really been persuaded that systematic planning has any relevance to their business, preferring to rely on their own gifts of intuition and entrepreneurial flair, and because the young graduates typically employed in corporate planning units have not been acceptable as advisers. . . . It is therefore crucial that before embarking on corporate planning top management should be convinced of the need to base its long-term decisions on careful analysis and that it should be able and willing to examine, question and restate the basic aims of the business and to articulate these as planned objectives for specific periods ahead. It is also important that a corporate planning unit should include senior and experienced managers as well as young analysts; that there should be frequent movement of staff between line management and the corporate planning unit in addition to a small core of professional planners; that the initiative should be seen to lie with the board and not with the planners; and that the planners should advance cautiously in gaining the confidence of the board.

The above comment highlights the danger of staffing planning units exclusively with younger people whose primary expertise lies in research and analysis. In the Civil Service, however, a further problem presents itself in considering the Fulton proposal. Virtually every department includes organizational units typically described as 'Policy Divisions'. Although their functions vary in detail, such divisions are normally the focus for preparing advice for Ministers on particular aspects of policy and for monitoring and reviewing the administration of those aspects of current policies. It might have been more appropriate, therefore, for the Fulton proposals to have addressed themselves to the work of such divisions and to have considered how their task could be facilitated, rather than to propose the introduction of a separate unit or units with responsibility for policy research and analysis.

Finally, the abbreviation to 'Planning Units' inevitably creates some confusion between the organizational arrangements for 'policy analysis' and those for 'management planning'. In a large department spanning a wide field of policy one might interpret the Fulton proposal as envisaging a Planning Unit operating in parallel with each existing Policy Division but with the former having longer time scales for its work. Such an arrangement would seem to complicate the work of policy analysis while doing nothing to assist in resolving the very difficult problems of co-ordination and choice between different policies and of allocation of available resources in accordance with policy objectives.

The above comments do not dispute the need to meet the requirements underlying the Fulton proposals. The post-Fulton developments in the field of Programme Analysis and Review (PAR) and the

American experience with PPBS suggest a number of possible 'guidelines' for meeting those requirements and for organization of the work of policy analysis at departmental level:

(*a*) The basic task of policy analysis should be allocated to the appropriate Policy Division: such divisions should be seen to have a 'planning' function in the field of policy analysis.

(*b*) Improved policy analysis inevitably requires more and better data and better research. It may be more economic to provide some research, economic and statistical support facilities on a shared basis. The common service units formed for such purposes should not be designated 'planning units' and should be seen as supporting the policy divisions for which they provide a service. This is not to say, of course, that economists and statisticians may not have a part to play in some instances as members of policy divisions.

(*c*) Each 'policy' should ideally be subject to a process of on-going analysis designed to ensure that the aims are clarified, indicators of performance are established, annual objectives determined, performance monitored and the policy reviewed. Comprehensive and concurrent analysis of all fields of policy on these lines is beyond present capability and resources. Full policy analysis must therefore be on a selective basis for some time to come.

(*d*) Policy analysis need not be precisely fitted into the annual management planning cycle. A review of a particular aspect of policy may require more than a year's work. Moreover, even if the results of some policy analyses conveniently become available for the management planning cycle, it would usually be impossible to consider all such results concurrently. The latest results should therefore be 'fed in' to the management planning processes as they become available.

(*e*) Organizational arrangements for co-ordinating the work of policy analysis should recognize that this task is one for top management and not for a 'planning unit'. Reference has been made to common service units to assist Policy Divisions in such fields as economics, research and statistics. In a similar way there are aspects of the top management task where a staff unit might provide support. For example, a central unit serving top management could be given the tasks of advising, in conjunction with the policy divisions, on the selection of policies for detailed analysis, of formulating common assumptions, determining a common style and methodology for analysis, and co-ordinating the approach to the problem of ensuring the provision of adequate data collected and analysed in accordance with established rules.

(*f*) There should be adequate arrangements for bringing together policy analysis and resource allocation. Here again a support unit may play a valuable role in analysing and presenting the options. But the ultimate responsibility for co-ordinating policies, for allo-

cating resources and for deciding the priorities between competing policies cannot be allocated to a 'planning unit'.

The emphasis on 'adequate arrangements' at (*f*) above is particularly important in the context of policy analysis. In some cases it may be appropriate for individual departments to decide the priorities between competing demands for resources: more frequently the allocation of resources for particular policies may require inter-departmental agreement at ministerial level. This aspect is considered further in the next two sections.

Planning: Resource allocation

In the Civil Service the PESC and Vote processes together with the arrangements for allocating manpower, constitute the principal systematic arrangements for central planning in the field of resource allocation. It is customary for critics to emphasize that the Vote relates to inputs and that it is in cash flow terms. At departmental level it is, however, essential to remember that the Vote processes—whatever their limitations—still constitute the main regular planning and control system in respect of financial resources. Departments have also to provide on a regular basis the data required for PESC purposes. Discussion must therefore proceed on the assumption that any other needs for information about resources must be met without impairing departmental ability to comply with these central requirements.

Central and departmental requirements may be significantly different. In the first part of this article I stressed the importance of Tim Plumptre's concept of the planning framework. The total field covered by the PESC and Vote processes is not an organizational entity for management purposes. The ability to plan and control—in the managerial sense—is clearly constrained. Moreover the 'level' at which this overall planning of resources takes place implies an emphasis on global allocations to large 'programmes' rather than on detailed figures and close control. At departmental level and in respect of organizational units within departments it may be necessary to cater concurrently for PESC and Vote, for special studies and analyses, for a more detailed breakdown of resources to the outputs which they achieve and, in some cases, for management information which can only be adequately provided by fully developed financial management accounting systems. It is these additional requirements that are the subject for discussion here, but this does not mean that there is no scope for developments which facilitate the preparation of Vote and PESC estimates. One department at least has recently introduced a computerized financial information system primarily to meet PESC needs.

Where departmental requirements are of an *ad hoc* nature—a particular cost benefit analysis or discounted cash flow calculation—it may suffice to use approximate figures in estimating the costs of resources and to obtain them specially for the study. In some cases more regular flows of data may be required, for example for use with operational

research models which have been designed to assist in evaluating alternative patterns of resource allocation. An important consequential advantage of systematic arrangements, is the ability to monitor the decisions taken about the allocation of resources. The point may be illustrated in the context of a DCF calculation for a computer installation. A post-implementation review may show that there is little basis for comparison with the original calculations. The configuration may have been varied and the workload may have changed both in character and volume. It is for consideration whether there would be advantage in using the first year's calculations as a basis for a form of 'budgetary control'. The calculations would then be revised annually in the light of events, thus facilitating control against a revised 'plan' (and contributing to the planning processes by providing recorded information about the variations between assumptions and actual experience).

More generally, departments encounter one major problem in planning the allocation of resources: the problem of relating input resources to the outputs which they achieve. Discussion of this matter is sometimes unnecessarily complicated by the variety of approaches advocated and by the differences of emphasis which arise at different levels. At the macro level—which is outside the scope of this article—it may be noted, for example, that available resources are allocated to the 'major PESC blocks'. Although the results to be achieved may not be detailed and are not always amenable to measurement, these PESC headings can be regarded as expressed in output form. For planning at other levels, the PESC headings are obviously much too broad: there must be more detailed specification of output headings. At departmental level (and elsewhere in the public sector) we encounter such terms as PPBS, output budgeting and programme budgeting: all of these and other similar approaches are basically concerned with associating the input of resources and their related outputs.

These various approaches reflect the traditional problem of the 'planner': so often one of his first tasks is to discover how the organization's resources are currently deployed in relation to its aims and objectives. In the process of establishing this apparently simple and clearly essential base line it is also common experience to discover that there is no system for producing and updating the data in the form required.

Classifying the data

The assumption inherent in all these approaches is that choices between different patterns of resource allocation are to be made in accordance with preferences in respect of the alternative outputs which can be achieved. If this is the intention it is apparent that there must be suitable—preferably, systematic and regular—arrangements for ascertaining the actual or estimated input costs of the various alternatives and some way of evaluating and comparing outputs. It is, perhaps, a pity that this fairly simple proposition is sometimes confused by the tech-

nical terms which are used. More importantly, however, there is a long-debated and unresolved problem about the classification of outputs. On the one hand there is concept of a fixed hierarchy of 'programmes' and 'sub-programmes' encompassing the objectives of the organization: arrangements are then made to collect costs (or estimates) and allocate them not only to Vote headings and to organizational units but also to 'programmes'. ('Programmes' can be regarded as convenient groupings of outputs.) Assuming an ability to evaluate and compare the actual or potential outputs of programmes, decisions can be taken to vary the pattern of resource allocation: if the information system is designed for the purpose, the results of such decisions can be monitored.

This approach to classification is critically dependent on the choice of 'programme structure'. Because the 'conceptual frameworks' for policy analysis and for resource allocation frequently extend beyond departmental organizational boundaries, programme and management structures do not coincide: as a result, decisions relating to programmes have to be translated into and controlled or monitored by reference to the organizational and management structures. Moreover, a particular programme structure, despite the care and logic with which it is constructed, rarely suffices to meet, for any length of time, the need to aggregate data in a number of different ways for planning purposes at different levels of decision-taking.

All this is, of course, in marked contrast to the organizational situation envisaged in the management textbooks. Organizational structures are meant to reflect objectives so that costs can more readily be aggregated by reference to outputs for which a manager is accountable. In a commercial or industrial organization the discussion in this section would be primarily in terms of developing an appropriate management information and accounting system to meet the planning and control needs of an organization forming a management entity.

Because of the difficulties which may arise in adopting a single programme structure, an alternative approach is sometimes advocated. The alternative is to apply multiple 'coding' to cost data so that it can be processed and aggregated in a variety of ways. Obviously this approach is limited by the range and nature of the headings for which codes are introduced (and by computer capacities) but it is significantly more flexible than the single programme structure. It is still doubtful, however, whether one could devise a viable single coding system to meet all requirements at central and departmental levels.

Obtaining the data

The argument concerning alternative approaches to the problem of classifying data has proceeded so far on the comfortable assumption that the data is available. In practice, this is rarely if ever a safe assumption. In the Civil Service situation, the limitations of the Vote accounting system and the difficulties of ascertaining the costs of various

common services result in additional difficulties in obtaining data on a regular basis. For this reason alone it becomes all the more important to ensure that costly information systems reflect carefully identified requirements. The detailed systems and procedures for handling data are beyond the scope of this article, but it may be helpful to summarize the requirements noted in the context of policy analysis and resource allocation.

Departments will require data for policy analysis. I have suggested that this planning activity may frequently be interdepartmental, must take place on a selective basis and to time scales which differ from that of the annual cycle for PESC, Vote and departmental management planning. It seems necessary, therefore, to contemplate 'tailor-made' information systems for each 'policy' and some reliance on *ad hoc* arrangements to obtain the data required for special analyses and reviews. The question then arises whether a single information system should be designed to provide data about the allocation of resources to policies. There is, however, more than one question in this respect. It is necessary, as we have noted, to consider the requirements for information at different levels. Where the decision on policy and resources is above departmental level, the information must be provided in the form required at that level. For example, a particular 'programme structure' may be convenient for central purposes, but the department may need information in a different form for purposes of internal management. The central needs for information in specific formats may lead to the central design of an appropriate system to which departments contribute on a regular and prescribed basis. Until such a system emerges (to supplement PESC and Vote requirements) it seems necessary to respond to *ad hoc* requests on an *ad hoc* basis.

This over-simplified and somewhat rudimentary analysis leads us to the conclusion that departmental information systems concerning resource allocation ought, at this stage, to be developed primarily to meet the internal management needs of each department. It will obviously be beneficial if such systems also serve some of the other purposes discussed, but we have not yet reached the stage at which departments can confidently design comprehensive on-going systems of regular data collection which can bring all the requirements of policy analysis and of central and departmental resource allocation together. We can therefore now turn to the needs of departments in respect of some aspects of management planning and consider, in that context, the question of data about resource allocation.

Management planning

The commercial and industrial concept of corporate planning might appear to be more directly relevant to management planning at the level of a department. Each department is usually thought of as being an organizational entity and it has an allocation of resources and a number of policies competing for those resources. Before we enthu-

siastically embrace the textbook approach we should note a number of significant differences between a department and a company. I would place first the fact that departments are not in a management situation in respect of those policies which are implemented by organizations external to the department: the fields of education and health provide examples. Of equal and related importance is the limitation upon the scope for a department, in isolation, to vary the pattern of resource allocation in respect of different policies. (There will, of course, be scope for influencing changes in policy and in allocations of resources; and departments may have scope for deciding or influencing the choice between alternative ways of achieving given policies.) Thirdly, there is the difficulty of evaluating and comparing the benefits of competing policies. We can compare the costs of so many miles of motorway, so many additional hospital beds and so many additional places at school or university, but the comparison does not help us to decide how much of the available resources to allocate to each of them. We thus arrive at the conclusion that the corporate planning approach is only likely to be appropriate where a department both *administers* and *manages* the Government policies which it helps to formulate. Even in this situation the department will be less concerned with its own survival than with the 'well being' of those policies. This fundamental difference of purpose may significantly affect the scope for making long-range planning assumptions about policies and resources.

One way in which the problem of evaluation can be tackled is well illustrated by reference to the systems adopted, and being further developed by some Research Councils. Department of Education and Science in conjunction with the Treasury assists Ministers in determining the total annual resources which, subject to parliamentary approval, will be available to each Council. These totals are arrived at by a process which involves DES, the Advisory Board for Research Councils and the Councils themselves. So far as the individual Research Council is concerned, it has to formulate and keep under review a research policy or strategy which, in broad terms, covers the nature of the research which it wishes to support, the way in which that support will be given (e.g. to its own research institutes or to work in universities) and the extent of the support. The potential benefits of alternative expenditures cannot be evaluated except by a subjective process of informed scientific judgment which takes into account the needs, opportunities and existing facilities and progress. The deliberations and reports of 'policy working parties' thus become the mechanism for policy analysis and review. The resultant decisions on the allocation of resources can then be monitored by means of a management information system which aggregates costs under various appropriate heads. The individual project may form the unit for costing purposes—in the jargon, the cost centre—not because project control by cost is necessarily appropriate but because the project is the natural and most convenient base for a costing system which then provides a variety of

cost aggregations obtained by the multiple coding of projects. All these internal processes can be harmonized with the PESC and Vote (or equivalent) procedures and integrated into a planning system not dissimilar in general character from the corporate planning processes.

It is significant that each Research Council forms a relatively discrete organizational unit for purposes of research policy and management: it is this which permits the development of a form of corporate planning. The new 'customer/contractor' relationships will require new machinery for consultation and may influence the pattern of research, but they can readily be absorbed into the planning process. (If the comparison can be made without offence, these new influences might be described as strengthening the processes of 'market research'.)

It is possible to detect broadly similar developments which have already taken place or are currently taking place in similar discrete areas of activity within the Civil Service. These range from the more obvious and special exa[illegible] management of projects of varying sizes and complexity to ma[illegible]ent planning for organizational units within departments or, mor[illegible] exceptionally, whole departments. The potential trading fund organizations provide notable examples of developing management planning systems which present similarities with the commercial model. In many departments, however, the internal planning of resources may be concerned primarily with manpower (or ADP and other alternatives to manpower). The system for allocating and controlling manpower then becomes significant in the planning context and has to be appropriately integrated with the systems for formulating and reviewing policy. The apparent absence of the introduction of corporate planning on commercial lines is surely attributable to the limitations and complexities noted in this article rather than to any failure to understand the corporate planning approach. There is certainly no evidence of failure to develop planning techniques; for example, there are areas where highly sophisticated operational research models are now being developed to assist in policy analysis and in optimizing the allocation of available financial and manpower resources; and there are numerous examples of the use of project planning techniques.

The general truth which emerges is that a suitably modified form of corporate planning may be appropriate for those departments, or for those organizational units within them, which have a significant degree of delegated authority for the on-going administration and management of reasonably discrete areas of 'Government policy'. Other forms of management planning will, of course, be appropriate in situations clearly amenable to them: project planning is a notable example. For the rest, it seems right to concentrate on the problems of policy and economic analysis and of resource allocation and to recognize the severe limitations on the scope for full-scale corporate planning on commercial lines precisely because there is frequently no corporate organizational framework for that purpose.

The Fuel Economy Unit

P. E. HENDERSON, Property Services Agency, DOE

Fuel costs

In 1971 an Exchequer and Audit report drew attention to the alarming rise in the Department's bill for fuel and mains services: from £8·44 m in 1965–66 this increased to £11·9 m in 1970–71 and £15·8 m in 1971–72. Similar increases took place in the expenditure of MOD which stood at £34 m in 1971–72. Part of the rise is due to an increase in the size of the Estate, but the major part of the rise is due to an annual 10 per cent increase in fuel costs for the period 1965–71 and a 30 per cent increase for the year 1971–72. The latest price increases have lifted the level even further.

Fuel Economy Unit

In an attempt to contain the costs or even reduce the level, a decision was taken to set up a unit to consider the situation. The Unit was formed as a combined operation between the Home Regional Services and Engineering Services Development Directorates of the PSA, and was charged with introducing and implementing practical methods of economizing in the utilization of fuels. In addition, Fuel Economy Officers were appointed in each PSA regional office to support the Unit in the day-to-day local arrangements of implementation and to provide a feedback of information and suggestions from the Regions to the Unit.

Fuel economy priorities

The initial task of the Unit was to determine the priorities in relation to the various fuels involved. The Unit had, in effect, to be cost accountable and any solution to a problem or any work put in hand had to be on a cost effective basis.

From initial surveys it was found that the two major areas to be considered were space heating using gas, oil or solid fuel hot-water systems and electricity used for lighting and power.

Space heating economies

The expenditure on heating fuels in the Civil Estate is shown in *Table* 1 opposite.

Just prior to the setting up of the Unit, work had been completed by the Department in conjunction with Messrs Honeywell Ltd, on a method, called optimum start control, to overcome the problems associated with the existing forms of heating controls for economy. The new method enables the heating plant to be operated only long enough to meet the requirements of the occupants of the building. With a

Heating fuel	Fuel expenditure		
	1965–66 £m	1970–71 £m	1971–72 £m
Solid	4·0	2·10	1·60
Liquid		2·90	5·60
Gas	0·63	1·00	1·47

Table 1

typical 'nine-to-five' working day, the plant was switched off at night and week-ends and the new controller ensured that the building was up to desired temperature at the start of each day. Tests were carried out in the heating season 1970–71 in three Department buildings and fuel savings, against the previous control system, of 30–50 per cent were obtained. The tests were carried out under strictly controlled conditions and, making due allowance for practical limitations in normal use, a figure of 25 per cent was taken as a basis for economic appraisal on future installations of optimum start control.

A contract was let with Messrs Honeywell on a survey, report, supply and installation basis for 500 properties with fuel expenditure of over £1,000 per annum in the year 1971–72. Each proposed installation was costed against the advised capital cost of the conversion and a discounted cash flow method was devised to ensure that the conversion would be cost effective. Under this method of costing, approximately 300 buildings were converted and the costs and savings are shown in *Table* 2.

Number of properties surveyed	Number of properties converted	Total fuel cost of converted properties at 1972–73 prices before conversion £m	Annual savings		Capital cost	
			Total £m	Per conversion £	Total £m	Per conversion £
453	306	1·047	0·262	850	0·458	1500

Table 2

It can be seen that the capital cost of conversion was covered in about two years and from then on the savings are accumulative. Any further increase in fuel costs result in a greater cash saving.

The original selection of over £1,000 expenditure properties was to obtain an early result of sufficient magnitude to justify the setting up of the Unit and the effort and costs involved. Once the extent to which optimum start control could be applied was realized, the Unit pursued a policy of attempting to reduce the capital and installation costs of optimum start control. This proved so effective that it became possible to consider for conversion, properties with fuel expenditure less than £1,000 per annum (prices year 1971–72). *Table* 3 shows the original estimates of costs and savings and the programme of conversion is now well in hand.

Number of properties put forward	Number of properties to be converted (estimated)	Total fuel cost of converted properties before conversion (1971–72 prices) £	Total estimated savings on converted properties £	Total estimated capital cost of conversion £
1,000	800	600,000	150,000	400,000

Table 3

Initial returns show the above estimate to be conservative and it appears that a greater number of the 1,000 properties will be converted. The increase in savings and capital cost will be approximately *pro rata* and return on capital is about two years as required.

Controls already installed are saving an estimated equivalent of 1,700 tons of coal per annum based on a price of coal of £15 per ton. The controls now being fitted will lift this saving to an estimated level of 30,000 tons per annum in the heating season 1974–75.

Electricity economies

Lighting

A survey of use of electricity in Government properties showed that approximately 70 per cent was consumed in lighting. A study of more effective lighting control is at present being undertaken. The premise for this investigation is the fact that lights are used for a typical period of 3,500 hours per annum compared with the theoretical figure of 2,000 hours.

Tariffs

As a management function, savings were obviously available in the selection of the correct tariff on which each property should be charged for electricity. Due to changes in demand and pattern of use, etc., the originally correctly selected tariff may no longer be appropriate for

lowest cost operation. With the introduction of centralized accounting, there appeared a lack of appropriate management information to enable engineers and administrators to reappraise the situation to apply effective cost control to fuel accounts. A provisional review of electrical tariffs selected for buildings indicated that over £300,000 could be saved annually by changing to a more appropriate tariff. Computer programs are currently being written in conjunction with Accounts Division, Hastings, to review the electrical tariffs selected for some 30,000 accounts in the Civil Estate. This will be completed towards the end of 1974 and will allow not only a review of existing tariffs but a continuing review of tariffs on an annual basis. The programme can also be used for the initial selection of a tariff for a new property.

Fuel economy lectures

The unique experience and information accumulated in the Unit over the past two years has been used as a basis for a series of lectures to engineers responsible for heating system operation both inside and outside the Department. The response to the lectures has been very satisfactory and reports back to the Unit show that there was, and still is, a need for this information.

Future work

Space control

Work on the optimum start control contract has shown an area of possible savings up to approximately a further 15 per cent over and above that obtained from optimum start. This area covers the need to be able to control the space temperature more closely to the desired level instead of, as at present, ensuring that the level is reached and generally exceeded. The cost effectiveness of any necessary control system will need to be considered very carefully before any decision can be made on obtaining this further saving.

Gas tariffs

A similar exercise to that to produce a computer program for electricity tariffs, will be applied to the available gas tariffs. At this stage, an indication of the amount of savings available is not possible, but spot-check analysis indicates that savings are available.

Management information

The need for a relatively simple method of indicating buildings running with energy costs higher than necessary has been highlighted in past studies. A pilot study is to be undertaken to compare energy costs per unit area in an attempt to indicate the 'problem' buildings. If this approach proves successful, the technique will be applied to all Civil Estate properties as a management tool.

Conclusion

In the present 'unsettled' fuel situation, and probably for some time to

come, the work of the Fuel Economy Unit is going to be of paramount importance. Whether the Unit remains in the form as today, or whether the need arises to vary or widen the terms of reference, only time will tell, but considerable experience and data has been accumulated and this will continue to be made available to any person or organization that can benefit from it.

In considering the use of fuel, account must be taken of the escalation of prices now taking place. *Table* 4 shows a comparison of average net prices of fuel oil from departmental contracts.

Grade	August 1973	February 1974
	per gallon	per gallon
Class D	6·8p	18·4p
F	5·25	13·0
G	5·00	12·0

Table 4

The figures emphasize the need for further economies, for consolidating the improvements already made and for ensuring that these improvements are maintained and not allowed to 'slip back' through lack of supervision. The results of the work of this comparatively small unit are ample demonstration of the cost effectiveness of its action which becomes progressively more so with increasing costs of fuels.

Accountability for Staff Management

B. J. HOLLAND, Civil Service College

Brian Holland is a Director of Studies at the Civil Service College. He joined Ministry of Defence (Air) in 1963 as a member and then as section head of a team of psychologists involved in attitude surveys among RAF personnel. He left the Civil Service in 1966 and worked for a firm of management consultants until 1970 when he joined the Civil Service College. The article that follows reflects the personal opinions of the author and should not be interpreted as a reflection of official policy. It owes its origins to the author's contacts with Civil Service managers on training courses and their attempt to come to terms with the effects on their work of recent policy developments. —*Editor.*

New pressures on the line manager

The average civil servant, professional, technical or administrative, with responsibilities for the management of subordinate staff, is under pressure today from two main areas of policy development. The most generally felt pressure will arise from his increasing involvement in centralized personnel procedures, especially appraisal and career development. Such procedures take up more of his time than ever before, make personal contacts with his staff a matter of duty rather than a matter of preference, and require him to make explicit statements about the jobs and performance of his subordinates.

At the same time, pressures for more accountable management are making both line managers and policy staff of some departments increasingly aware of the need to be explicit about the overall aims and objectives of work and to define the desired role relationships between managers engaged in achieving these.

Like the pressure for better staff management, therefore, the pressures for more accountable management require the manager of staff to make more frequent personal contacts with his subordinates, peers and superiors, and to hold more frequent interviews and meetings designed to formulate explicit statements about such abstract and objective matters as roles, objectives and performance.

It seems to me that there are three main problems for the typical staff manager as a result of these pressures:

(*a*) To find time for all the contacts with his staff now required of him —and do his job.
(*b*) To be convinced that it is necessary to enter into such activities, and to feel accepted by his staff when he does so.
(*c*) To feel certain that there are adequate standards by which his

success in these activities can be judged by those in a position to reward or sanction him.

Time for staff management

The first problem of finding time for these activities may only be eased by linking the personnel divisions that produce the required procedures with the manpower and organizational divisions that provide human resources. Staff inspection and management services teams are increasingly being trained to ensure that the activities required to manage staff effectively are given due allowance in complementing, though one of the major problems here is a lack of any detailed knowledge of how much actual time such activities require in different organizational settings. On a prima facie basis they would seem to require much more time allocated to them in large operational divisions like local offices where there are clear output criteria and a broadly based management hierarchy than in policy divisions which have smaller, narrower management hierarchies with a closer network of working relationships. Clearly some better typology of working organizations in the Civil Service is needed if such a hypothesis is to be tested by closer analysis of the activities of managers.

One step towards a better understanding of the resource requirements of staff management, however, might be to list the main categories of activity required of a line manager in charge of staff. Such a list could fall under two headings: the activities required of him by his personnel management division (*see Table* 1 *below*) and those activities which he may enter into at his own discretion (*Table* 2 *below*). In practice it may well be that these distinctions are not clear-cut, and one question that might be considered is whether attempts should be made to clarify and allocate these responsibilities more precisely.

Table 1

Standardized personnel practices that require the staff manager to operate them wholly or in part:

Job description (e.g. for job evaluation, appraisal or for defining role relationships)

Recruitment (e.g. by explaining the work to intended recruits)

Selection (e.g. either as a member of an occasional board or in respect of staff that will work direct to him)

Induction (e.g. by personal briefing, by design of programmes or by lecturing to groups of new staff)

Training (e.g. by operating on-the-job training, initiating demands for training and evaluating its effectiveness)

Placement (e.g. by discussing the allocation of new staff to posts)

Table 1—Continued

Appraisal (e.g. by means of annual confidential reports and job appraisal reviews)
Posting (e.g. by consultation with the Career Development Officer)
Promotion (e.g. by involvement on boards)
Retirement (e.g. by means of exit interviews, initiating premature retirement proceedings or assisting with retraining needs)
Grievance (e.g. by operating the due procedures)
Welfare (e.g. by early identification of welfare needs often as a result of JAR interviews)
Absence (e.g. by authorizing leave and other forms of absence from work)
Joint consultation (e.g. by operating the Whitley mechanism and ensuring that it does not atrophy)

*Table 2**

Personnel activities carried out by the staff manager largely at his own discretion or in response to instructions from his immediate superior (for which he is therefore wholly accountable):

Communication (acting as a link and not a bottleneck with his staff on all matters affecting the work of the division)
Allocation of duties (organizing the allocation and flow of work to ensure the maximum effectiveness and motivation)
Mutual goal setting (setting aims and objectives jointly with staff and helping to improve performance)
Acting as a { figure-head / representative / negotiator } on behalf of his staff
Resolving conflict—between individuals and groups.

* This list is tentative and is not intended to be exhaustive; it is derived from reported studies of managerial behaviour including, for example, *The Nature of Managerial Work*, by H. Mintzberg, published by Harper & Row, New York, 1973.

From such a set of headings, establishment officers might be able to list staff management activities and, by means of, say, activity sampling exercises, participant observation or self-completion management diaries, arrive at some idea of their duration and frequency in the various types of work of the Department. Such an exercise might well be helpful in conducting manpower exercises in the future and might well be a first practical step towards a typology of departmental organi-

zation structures that could be related to the managerial demands of the various types of post.

The necessity for and acceptance of staff management

The problem of whether or not staff management activities are regarded by the line manager as contributing to the effectiveness of his division is even more difficult to resolve since it involves, initially, creating a climate of opinion in the organization that values such activities. Disbelieving or unwilling involvement inevitably leads to ineffectiveness since the activities themselves depend upon interpersonal behaviour where negative attitudes immediately become stumbling blocks.

The relevance of accountable management and personnel systems to his own work will be enhanced in the eyes of the line manager in almost direct proportion to the amount of opportunity he has had to influence their implementation in his own work situation. Yet it is extremely difficult for the personnel division to provide an opportunity for this, due to the long lines of communication which may exist between them and the operational managers of the departments. It will be interesting to see if the out-posted personnel sections responsible to establishments divisions that some departments are now setting up will improve this situation.

While many of the new personnel divisions are attempting to establish a 'client' relationship with their operational divisions, sheer constraints on time may make personal visits to them almost impossible. If out-stationing personnel staff is not possible, one way of extending a personnel presence, indirectly, might be through retraining the staff of O and M and staff inspection teams and adding to their terms of reference so that they can comment on and take account of local difficulties in the field of staff relations generally and in the implementation of the new personnel and accountable management procedures in particular. Job satisfaction teams are also ideally placed to make this kind of comment, as are MbO practitioners.

Yet, however willing he himself is to undertake staff management activities, the success of the line manager will also depend upon his credibility and status in the eyes of his own staff. This credibility will suffer not only through applying such new procedures as appraisal without due thought to their appropriateness. It will also be badly affected where staff relations are generally poor, or where staff find it difficult to accept the authority vested in a manager who seems to have little power to influence higher authority on their behalf. The situation where staff side representatives have more power and better information than the local line manager is not uncommon in large offices. Similarly when the local Whitley machinery seems to be incapable of dealing with strike situations locally it may also be difficult to maintain it effectively as a means of consultation.

Belief in the authority and managerial role of the local manager may also be affected if he goes on strike with his staff. This may lead to

closer identification with his staff, but it could also mean that his ability to exercise those personnel procedures for which management will hold him accountable might be damaged, since these demand some acceptance of the authority and role vested in him by his position within the management structure.

This is an area where it is extremely difficult for personnel divisions to give clear guidelines to the line manager since the point in the organization structure where a man must identify himself with the employer rather than his staff and colleague is almost impossible to define in a way that all concerned will find acceptable.

This sort of situation is probably more critical in a local office situation than in a small policy or research unit. This can lead the personnel division (itself a policy unit) to feel out of sympathy with the line manager's problems. One answer to this, in terms of staffing personnel divisions, might be to ensure that they contain a fair proportion of people with recent departmental line management experience. The difficulty with this sort of policy, however, is that it can lead to a lack of expert knowledge among personnel staff, lack of ability to regenerate personnel policies and, eventually, stagnation in the field of personnel management.

There is little doubt that the line manager after a period in a personnel division, however hard he tries to bring his line manager experience to bear, will find himself accepting the norms and traditions of his own working group. Six months is usually enough to ensure that a line manager placed in personnel work without training is both out of touch with his own division and not yet up to date with the latest thinking in personnel management. It is hoped that the new Civil Service College courses on personnel management will make some impact on this problem by raising standards of knowledge before, or soon after, such postings.

Standards of performance of staff management activities

The final dilemma of accountability for the management of staff is that the performance of all the activities listed in *Table* 2 and many of those listed in *Table* 1 is very difficult to record and to measure against any agreed standards. This means that assessment of his performance cannot readily be built into personnel systems or be brought to bear upon decisions to reward or sanction the individual according to his performance. The new ACRs do permit some assessment of factors related to such performance but certainly not in terms of the activities listed in *Tables* 1 and 2. Any future appraisal systems could well take better account of this by a special section relating to staff management. This section could be made to reflect the categories used when describing jobs in order to build up a picture of the number of staff needed for particular areas of work, giving due allowance, as suggested earlier, to the time needed for staff management activities. This will go some way towards ensuring that such information on performance as can be

had is available to promotion boards and selection panels for particular posts. It will not, however, ensure that this information is in fact taken account of. This will depend very largely on whether senior managers both value these activities in others and perform them well themselves.

A consultancy role for personnel divisions?

While personnel divisions provide a service to line managers, they also necessarily impose upon them sets of practices which have a drastic effect on their relations with their staff. While nothing will remove the obligation of the manager to be as effective as possible in his relations with staff it is really the personnel division who must ensure that at the very least they do not place undue obstacles in his way. One way of ensuring this for the future may be to give more of a diagnostic role as well as a regulatory one to personnel divisions. The next few years might well see the development of personnel management as an internal consultancy service in some departments.

Copying 20 million Index Cards

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Introduction

This account of the adaptation of the routine operational use of copying machines to meet unusual short-term requirements is offered as an example of the value of looking beyond the normally accepted limits of feasibility when a successful outcome may justify the effort expended.

Card indexes are maintained by National Health Service Family Practitioner Committees as part of the procedure for paying family doctors. The index cards identify patients and show the names of the doctors with whom they are registered. Family Practitioner Committees are committees of Area Health Authorities. They are responsible usually for patients in the area of one of the new local authority counties or metropolitan districts. The cards are up-dated when patients change doctors, and they are transferred between Family Practitioner Committee indexes when patients move from a home address in one Area Health Authority area to a home address in another area.

For practical reasons cards in the Family Practitioner Committee indexes are filed alphabetically by patients' names. There is, however, a central index to co-ordinate all the local indexes and this is arranged in numerical order of patients' National Health Service numbers; its main function is to show by which Family Practitioner Committees particular patients are currently registered with their doctors.

Before 1st April 1974 the local indexes were in the hands of National Health Service Executive Councils based on local government county and county borough areas. With the reorganization of both the National Health Service and of local government with effect from that date, many of the Executive Council indexes had to be dismantled before reassembly into Family Practitioner Committee indexes covering the areas of the new counties and metropolitan districts.

The problem

The central index had to be up-dated to reflect the rearrangement of local indexes. This had been done on rare occasions in the past, when small adjustments were made to certain local authority areas, by sending to the central index the actual up-dated local index cards from which the central index records were adjusted, the cards then being returned to their local indexes, but such a procedure was impracticable for the recent much greater task of amending some 20 million records. The high cost of transporting that quantity of irreplaceable cards in

adequate security to and from the central index at Southport from all over England and Wales, and the inconvenience to Family Practitioner Committees of being without their index cards for a period, with the likelihood that this would give rise to complaints by patients and doctors, prompted a search for some other means of conducting the operation. It was hoped also to avoid the tedium and expense, estimated at £40,000, of sorting the cards back to alphabetical order after the central index had processed them numerically, and the inconvenience of having to keep the relevant cards segregated from others in the local indexes for anything up to two years until the central index had had time to call them in for processing.

The solution

The obvious answer lay in making copies, lighter and less bulky than the originals, of the relevant cards; these could be sent to the central index more cheaply than the originals and destroyed there after processing. Re-sorting of original cards back to alphabetical order and the cost and trouble of return transit would be eliminated by this means and, further, the original cards would be available for merging into the new indexes as soon as the copying operation was finished.

Means were sought, therefore, of copying the 20 million cards situated in over 80 locations in England and Wales in quantities ranging from less than 1,000 up to around 1½ million, about 3 million in one exceptional case. Each copy had to be over-written with ciphers indicating the old and the new local index to which the original belonged and the date the batch was copied.

Copying by typewriter or in manuscript was out of the question on grounds of time, labour supply and cost, but the original cards were unsuited to any but the most tolerant of mechanical copying processes. The cards had been in the indexes for periods ranging from the current working day up to more than 25 years. Some of them had been completed by typewriter, but most were in manuscript and in every possible variety and shade of ink including blue. The background colour varied considerably and in some cases provided poor contrast with the writing. The thickness, quality, condition and trimmed size of the originals were also very varied and rendered the mechanical handling of the cards into and out of any copying machine very difficult.

For procedural reasons the copying had to be done in as short a period of time ending as near to 1st April 1974 as possible and none of the offices housing the original cards had anything more than a low volume copying machine for occasional use. These factors called for a mechanical process tolerant enough to copy several cards of widely varying copying quality at a single operation. Considerable numbers of machines suited to a fast rate of uninterrupted operation would have to be deployed and frequently re-deployed on short-term loan at widespread locations throughout England and Wales.

Microfilming was ruled out as being too technical for short-term use

at so many locations simultaneously. The varying photographic quality of the originals, the subsequent sorting of the microcopies from alphabetical to numerical order at the central index, the temporary provision there of some 200 readers and the working delay imposed by their use involving extra staff costs were other adverse factors.

Initial trial

Rank Xerox were approached as a company with the facilities to hire the sort of heavy duty machines needed, and with a country-wide organization for their deployment and maintenance, and for the instruction of staff unaccustomed to operating them. The Government Branch of the company was consulted and a trial was mounted at a large local index in London. The Rank Xerox model used, a 422, worked as quickly as the operators could feed it; a faster machine would not have been of any advantage. This was satisfactory as the 422 was more readily available than other models in the numbers required for the main operation; further, its modest current consumption, a 13/15 amp supply being sufficient, eased the task of installing each machine in a number of locations in comparatively quick succession. By careful adjustment of the machine the company obtained acceptable results even from unpromising cards at only a slight loss of overall quality, and six cards of varying photographic quality could be copied at a time on to the maximum size of paper acceptable to the machine, 254 mm × 381 mm (10 in. × 15 in.), without loss of copy intensity at the edges.

After trials Rank Xerox obtained to their own specification suitable plastic holders to contain six cards for exposure in one operation. The cards fitted into holes cut in the plastic and rested on rebates formed of strips of stiff, transparent material which could be removed as necessary for the inscription by wax pencil against each card space of the ciphers and date, and then stuck down again until the inscriptions needed amendment. A team of three people per machine, one placing cards in the holders, one operating the machine and one removing cards from the holders, retaining them in their original alphabetical order, was most effective; four holders were sufficient. The platen cover was removed from the machine to aid smooth work flow. The team did not seem to find their work tedious, over a period of more than six weeks they seldom bothered to exchange tasks. Their output was at the rate of 22,000 to 25,000 cards copied per week of 38 working hours, the number of unsatisfactory copies being negligible.

The central index, relieved by the card copying procedure of the need to accommodate and handle heavy, bulky originals in their metal containers, undertook to separate the sheets of six copies into single copies. They obtained a suitable guillotine for the purpose and since the card holders used in copying ensured that all copies registered properly the cutting operation was very simple. Central index was relieved of the need to re-sort cards back from numerical to alpha-

betical order, and they were not under any obligation to complete their work with exaggerated haste in order to return originals to their local indexes with the minimum of delay. This would have involved overtime and week-end working with the attendant expense and risk of error.

The full-scale operation

The trial having been successful, Rank Xerox were given an order to provide machinery to copy 13 million cards in about 75 locations in the Provinces. Plans for the reorganization of the Health Service in Greater London were not complete at the time but a start has since been made on copying a further 8 million cards in five locations there. A control point was set up to liaise between the company and the indexes.

Rank Xerox drew up a provisional programme for the deployment and re-deployment of machines until the task was finished. These plans had to take account of the fact that some local indexes were in remote areas and others had comparatively few cards to copy. Some of these offices sent cards to another office for copying but rarely over a distance of more than 20 miles. The capacity of local index offices to accommodate machines and the location and availability of the company's workshop, installation and servicing facilities had to be taken into account as well. The programme was agreed with little amendment and machines were installed in 48 places on a scale varying from three machines each for 24 weeks to one machine for four weeks.

The company obtained supplies of card holders, sent an explanatory letter to the Chief Executive of each office where machines were used and subsequently visited them to discuss the installation and answer the staffs' questions; they also trained operators. The necessary supplies of all materials including paper and card holders were delivered with each machine; emergency reserves were held by the liaison staff.

The operation was welcomed by the staff and it turned out extremely successfully. In most cases the target of 25,000 cards copied per week was exceeded. Taking into account £40,000 saved by avoiding the final sort back to alphabetical order, the difference between the cost of sending the copies to the central index and what would have been the cost of sending the actual cards there and back again, the convenience and staff time saved, working errors avoided by retention of the originals at the local indexes and the economies at the central index resulting from having a steady head of work with a controllable flow, the operation can be said with certainty to have been a financial success although actual costings cannot be put on most of the contributing factors.

The Management of Management Literature

The Experience of CSD Library

MRS. B. M. HOWARD, Civil Service Department

Introduction

What is *management*? Applied economics, or applied common sense? Personnel administration, or administration personnel? A service, or a science? Lyndall Urwick in his famous article 'The Problem of Management Semantics' (*California Management Review*, Spring 1960) discussed the difficulties of defining the term. In the New Oxford Dictionary he discovered seven definitions of the noun, and twenty-two of the verb 'to manage'. He also found a dialect usage which linked 'management' with 'manure'!

But if management can be all things to all men, what does management literature embrace? Mr. K. D. C. Vernon, Librarian of the London Graduate Business School, in an article in *ASLIB Proceedings* (March 1972) defined its scope as:

(*a*) The manager's job—planning and policy-making. . . .
(*b*) All aspects of decision-making and problem-solving.
(*c*) The behaviour of people in organizations and work groups.
(*d*) Aspects of the environment . . . which affect decision-making.
(*e*) The concepts and disciplines which underlie the above activities.

That is to say that management literature is concerned with large areas of that amorphous subject, *The Social Sciences*. This is the arena of the Civil Service Department Library, which is designated as the Central Management Library. Since it is attached to a Government Department, it operates in a specialized environment and, as its title suggests, is concerned with the subject of central management—that is to say with aspects of the management of the processes of government and of the Civil Service itself. Its field is management allied to public administration. This differentiates it from the libraries of the British Institute of Management and of the business schools. It includes little material on manufacturing, production, marketing or other business problems. But it does cover political science, politics and government administration—as well as the five Vernon categories of management literature. Its total scope is therefore very wide. Its problems and concerns are different from those of, say, an O and M library or small information service. In order to achieve total control of a difficult subject area, certain assumptions have been made and certain procedures adopted

which might not, perhaps, be relevant to less comprehensive collections.

The CSD library was set up in 1970 and in its preliminary planning two basic principles were formulated which have influenced both organization and book stock. It was decided first that, in our context, management was a 'today' subject, and second that a system would be formulated to retrieve information only *when* required and would not record information sources *in case of* need. The library has in consequence developed in an unconventional manner designed to be both cost-effective and efficient.

In declaring management to be a 'today' subject, we speak both from intuitive reaction and from experience of customer demand. It has been demonstrated by our users that sought information falls within a fairly narrow time-band, extending back for a maximum of about five years. Earlier texts may be required occasionally in process of a comprehensive literature search, but interest is typically centred well within this period. This concern with the contemporary points to the greater importance of journal articles rather than books, since the time scale of preparation/publication is considerably shorter. The importance of journals is strengthened by the specific nature of much management research. That is to say that the short magazine article is often a more appropriate vehicle of communication than a book which is of necessity longer and more diffuse. There is, in addition, a tendency to prefer a representative selection of recent writings rather than to demand an exhaustive listing—a predilection which favours the compressed over the discursive.

From these reasonings we deduce that the typical parameters of a literature search in management are likely to be currency—within a maximum of five years or less; representative—rather than exhaustive; and specificity of treatment.

Journals

Appreciation of the importance of journal literature on management leads to questions of its selection. But it is not easy to compile a list of the significant magazines. The subject spreads, as has been demonstrated, over the social and behavioural sciences and includes as well many of the quantitative techniques. There are many thousands of journals, any one of which might carry useful articles and which may be of interest to a student of management, or to a practitioner. Various empirical attempts have been made to identify the key journals but there is no general agreement on a standard list.

Two recent bibliometric studies have confirmed the problems of the generation of a list of core journals. The first was entitled *The Development of Management Documentation Services in the United Kingdom* (thesis presented by K. G. B. Bakewell in pursuance of the degree of Master of Arts at the Queen's University of Belfast, October 1972). He took as his datum a total of 107 journals derived from the management section of Woodworth's *Guide to Current British Journals* (Library Asso-

ciation, 1970) and British magazines contained in the draft core list presented to the third meeting of European Business School Librarians. Analysis of those covered in 1971 by seven abstracting and indexing services (four British and three American) reveals that:

No journals were covered by all seven services;
No journals were covered by six of the services;
Three journals were covered by five services;
Nine journals were covered by four services;
Fourteen journals were covered by three services;
Thirty-seven journals were covered by two services;
Twenty-seven journals were covered by one service;
Seventeen journals were covered by none of the services.

The statistics of the number of services are, of course, variables in permutation—that is to say that the 37 journals, for instance, were not all covered by the same two indexes, nor the 27 by the same one, and so on. This means that the services themselves did not agree as to which journals were significant and therefore worth scanning, and that to ensure proper coverage of even British journals—to say nothing of European or American—it is necessary to consult as wide a range of indexing tools as possible.

The second research study, based on five separate lists of management journals, reveals that of a total of 368 British and American titles published during 1971 only 11 were common to all five lists.

Since management journals range so widely, covering subjects from accountancy to work study, how can it be ensured that all likely titles are scanned, indexed and retrieved when required, bearing in mind also that the time/relevance ratio mitigates against the value of a retrospective data base? One solution to the problem is neither to scan nor to index journals. That is not to say that the difficulties of information retrieval are insuperable, but that they can be rationalized. Various possibilities exist; our preference is to react dynamically in response to a real situation, rather than to anticipate the possibility of demands that may never arise.

In CSD we prefer to buy-in carefully selected commercially published abstracting and indexing services which are consulted when a literature search is required. In periods when no such demands are made, no staff effort is given up to recording references. Another argument in favour of imported as opposed to domestic provision is the difficulty of identifying tomorrow's need from today's input. Like most libraries we have been asked for literature on unexpected topics. Under our system the information was retrieved when it was needed but did not assume significance beyond the time of the particular research project, since it was improbable that the references would be required a second time.

There are a number of abstracting services. No single one provides complete coverage but constant use and familiarity permit the librarian to consult those which are most appropriate to the particular task in

hand. Most are in printed format, appearing in monthly or quarterly serial parts. An increasing trend, however, is to the use of computer-based bibliographic data banks which can be consulted via a Post Office line linked to a domestic computer configuration. CSD is making an increasing use of these and finding them both efficient in retrieval and economical of resources. Employment of the computer may in time obviate any need to subscribe to published indexes for retrospective searches since the disc store can be tapped to retrieve precisely what is required when it is needed and payment made only for the time used.

Books

Important as serial literature is, there is a considerable wealth of material in book format which the librarian must organize and make fully usable for readers. The problems of arrangement and recall are totally different from those posed by journals.

Like most UK management libraries, the CSD arranges its books in accordance with the *London Classification of Business Studies* (published by the London Graduate Business School in 1970). As well as being a detailed library classification, this also provides a framework for information files, for documents not requiring full analysis and for other forms of subject indexing.

We have a simple form of catalogue which reveals information likely to be sought, but which does not entail the employment of staff resources in recording data which, if required, could be ascertained readily from published bibliographies or from the books themselves. From patterns of user behaviour it is obvious that many readers like to browse and to select from titles actually on the shelf at the time of their visit—the librarian should, therefore, ensure that a representative selection of texts is likely to be available—but readers do not often wish to concern themselves with sophisticated library catalogues. We have an author list and an index to the classification. There is, however—unlike many libraries—no subject catalogue. If users are not content with the material on the shelves, a literature search is made for them. In these circumstances two possibilities exist: either they are satisfied with a fairly short reading list of standard titles (on foreseeable subjects these are already available in the library), or alternatively their information parameters are unique, necessitating an individual bibliography.

No library can hope to contain within itself all material likely to be sought by its users—particularly in so broad a subject as management. But through the various co-operative networks and the British Library, almost any book published anywhere in the world can usually be provided.

Terminology control

Since management has a soft, imprecise and changing terminology, it is helpful to employ a thesaurus or term list to control vocabulary usage

and ensure consistency in indexing. A number of these have been published, some very specific, others embracing a wide subject field. The vocabulary of business management is displayed in *Management Information Retrieval* by John Blagden (Management Publications Limited, revised edition 1971). Unfortunately the depth and spread of CSD's interests are not covered by any available texts and we are, therefore, developing our own thesaurus on central management. It is now thought to have achieved a degree of stability and has been transferred to magnetic tape to allow regular up-dating. It has grown as the need for terms became apparent; the descriptors have literary warrant and have been checked against other thesauri and subject dictionaries. It is fully structured showing preferred terms, together with those not selected, and suggests broader, narrower and related phrases.

The library's subject index derives from the thesaurus. The terms, together with controlled operators (such as *in*, *for*, *by*, *and*, etc.) are combined by selective permutation into a subject heading and a modifying phrase.

Current awareness

Various methods exist of keeping oneself informed of new management literature. There are the review pages in journals selectively noting material in their subject areas, commercially published abstracting and indexing services, announcements from publishers and booksellers, lists and bibliographies from specialist libraries, as well as the classified enumerations in the *British National Bibliography* each week. We ourselves issue regular bulletins of recent books, research reports and journal contents, also from time to time short informal reading lists. Recent ones have dealt with such subjects as Flextime; Executive Stress; Programme Analysis and Review; Ministerial Responsibility; Management in Government; and, in lighter vein, Management Can Be Fun!

There are a variety of commercial current awareness services dealing with the various sub-fields of management. In CSD we buy-in on a need-to-know basis so that specialists can be provided with information which is particularly geared to their individual requirements. Most of these are printed, but it is becoming increasingly possible to provide a selective dissemination of information (SDI) service from computer-held data bases either on individual or group profiles. This type of provision is in accord with our second policy objective of directing specific information to the point of need rather than attempting to provide blanket coverage.

CSD itself issues a number of reports each year on aspects of central management. The library produces a monthly list of all new titles published as well as those shortly to be forthcoming. It is supplemented by an annual subject cumulation. In addition we provide HMSO with copy for their annual Sectional List 44, *The Civil Service*, which contains

details of all Stationery Office publications on the organization and functions of the British Civil Service.

Since management literature and information may come in languages other than English, there is often need for translation facility. This the library provides for CSD. To achieve flexibility a two-tier system has been established: first, a 'Linguistic Aid Service' to provide speedy verbal assessment of long documents; second, the use of professionally qualified translations staff to produce a fully accurate rendering if required. Under the linguistic aid service an officer with a document in a language with which he cannot deal is put in touch with another member of the Department with a knowledge of the language in question. Together they can then produce a quick assessment—one providing the subject expertise, the other the language knowledge—to determine whether a full translation is justified.

Conclusion

Management is a remarkably broad subject area which is developing rapidly. Its various aspects are interdependent and interactive. The literature on the subject is both voluminous in depth and diffuse in extension. It dates quickly, is highly fashionable, is jargon orientated and sometimes repetitive. An information retrieval system which is to succeed must be flexible, modern, perhaps unconventional and yet fully functional.

Note

The CSD library may be used for reference purposes by staff of other Government Departments or by bona fide research workers. A prior appointment is necessary and the amount of assistance which is available must, of course, depend upon other current demands on the time of library staff. Material is lent to other libraries, particularly to those in government, but the library is not one of first resort. Material is not lent to individuals—other than CSD staff.

Machinery of Government in Great Britain

Main changes during 1973

Ministerial appointments

The new statutory structure of Ministerial offices established by the Ministerial and Other Salaries Act 1972, was described in the article published in the February 1973 edition of this journal. As a result of the appointment in November 1973 to the post of Paymaster General of a second Cabinet Minister in the Treasury the size of the Cabinet, including the Prime Minister, increased to 20.* The post of Lord Chancellor does not count against the statutory restriction on the number of Ministers who may be paid as Cabinet Ministers and the Minister for Trade and Consumer Affairs was paid as a Minister of State. At the end of the year there were, therefore, 18 'first tier' Ministerial salaries in payment compared with the statutory limit of 19. The number of 'second tier' Ministers which stood at 29 at the beginning of 1973 was reduced to 28 in June when one of the Ministers of State in the Northern Ireland Office was appointed as Lord Privy Seal and his former office was not filled. When the former Paymaster General (who had held the post outside the Cabinet) resigned in November 1973 his duties in relation to the arts were transferred to a new post of Minister of State in the Department of Education and Science. The number of second tier Ministers thus remained at 28. Therefore, with the Ministerial changes in November 1973, the limit of 46 first and second tier Ministerial salaries was reached.

Northern Ireland Constitution

The Northern Ireland Constitution Act 1973 enacted in July makes new provision for devolved government in Northern Ireland in place of that contained in the Government of Ireland Act 1920. The new Act declares that Northern Ireland remains part of the United Kingdom and that no part shall cease to be a part of the United Kingdom without the consent of the majority of the people of Northern Ireland. The Northern Ireland Assembly Act 1973, enacted in May, had already made provision for the Northern Ireland Assembly and for elections to it. The Constitution Act itself sets out the powers of the Assembly and provides for the formation of a Northern Ireland Executive, and for devolution of governmental responsibilities to the Executive and legislative powers to the Assembly. This devolution was given effect on 1st January 1974, and the new Northern Ireland Executive took office on the same day.

* See note at the end of this article.

While the Secretary of State is from 1st January 1974 the channel through which executive powers are devolved from the Crown to the Northern Ireland administration, the effect of the Devolution Order is that from the same date he ceased to be responsible for the internal government of Northern Ireland (as he had been during the period of 'direct rule') but he remains responsible for the administration of law and order in the province, and is the principal channel of communication between the new Northern Ireland administration and the United Kingdom Government. As part of the new financial arrangements for Northern Ireland, the Secretary of State is also made responsible for making any necessary grant in aid to the Northern Ireland administration.

Changes in Ministerial responsibilities

The following changes in Ministerial responsibilities were made during 1973:

(*a*) *Government land transactions.* The Prime Minister announced in a written parliamentary answer for 25th January 1973 that the functions of the Treasury for co-ordinating policy on Government land transaction had been transferred administratively with effect from 8th January 1973 to the Secretary of State for the Environment who will act in consultation as appropriate with the Secretaries of State for Scotland and for Wales.

(*b*) *Scottish law.* In reply to a written Parliamentary Question the Prime Minister announced on 21st December 1972 that he had approved a re-allocation of legal functions in Scotland between the Secretary of State for Scotland and the Lord Advocate. The effect of the re-allocation was to transfer to the Lord Advocate by Order in Council (Transfer of Functions (Secretary of State and Lord Advocate) Order 1972—SI 1972 No. 2002) the following statutory functions:

(i) Functions relating to the Scottish Law Commission some of which had previously been exercised jointly by the Secretary of State and the Lord Advocate.

(ii) Functions relating to the Council on Tribunals and the Scottish Committee of the Council some of which are exercisable jointly with the Lord Chancellor.

(iii) Powers relating to rules regulating the procedures in connection with statutory inquiries held in Scotland and with proceedings before certain tribunals.

(iv) The laying before Parliament from time to time of proposals for corrections and minor improvements in enactments to facilitate the consolidation of those enactments.

The transfer of these functions came into operation on 1st February

1973. At the same time certain other functions were re-allocated by administrative arrangement. The Lord Advocate assumed Ministerial responsibility for the general oversight of certain branches of the law of Scotland such as the jurisdiction and procedure of Scottish courts in civil proceedings. The Secretary of State will continue to be responsible for all branches of the law of Scotland except those which are allocated to the Lord Advocate or are the responsibility of other Ministers.

(*c*) *Adoption of children.* Following the Government's review of the allocation of Ministerial responsibility for adoption in England and Wales, the Prime Minister announced in the House of Commons on 17th April 1973 that the Government had concluded that responsibility for adoption should be allocated to the Ministers responsible for child care in general. Accordingly with effect from 24th April 1973 responsibility for adoption in England was transferred administratively from the Home Secretary to the Secretary of State for Social Services, and in Wales to the Secretary of State for Wales.

(*d*) *Oil development in Scotland, and the Scottish Economic Planning Department.* On 17th May 1973 the Prime Minister announced in the House that the Minister of State at the Scottish Office had been given special responsibility for supervising and co-ordinating all matters relating to oil development which affect Scotland. This appointment did not involve any change in the existing executive responsibilities of other Ministers and their Departments. In the discharge of this new responsibility the Minister of State is supported by the Scottish Economic Planning Department. The Secretary of State for Scotland announced the establishment of this Department on 23rd May 1973. It has brought together the Regional Development Division and some of the closely allied divisions within the Scottish Development Department including those dealing with the Highlands and Islands Development Board, the Scottish Tourist Board, the Scottish Electricity Boards, the Scottish Transport Group and the New Town Development Corporations.

(*e*) *Government Actuary's Department.* Ministerial responsibility for the Government Actuary's Department was transferred from the Treasury to the Minister for the Civil Service with effect from 1st July 1973. This administrative change was announced in Parliament by the Prime Minister on 21st June 1973.

(*f*) *Voluntary organizations.* The Prime Minister announced on 11th July 1973 in answer to a Parliamentary Question that the Lord Privy Seal would assume responsibility for co-ordinating Government action in relation to voluntary social services previously exercised in part by a Minister of State in the Home Office.

(*g*) *Nature conservation.* When the Nature Conservancy Council began to discharge their functions on 1st November 1973 (see below) the general responsibilities of the Secretary of State for Education and

Science for nature conservation, including those for general policy towards endangered species, were transferred to the Secretary of State for the Environment. This was announced on that day by the Prime Minister in a written parliamentary answer.

(*h*) *Population.* The Prime Minister announced in the House on 18th December 1973, in answer to a Parliamentary Question, that he had asked the Lord President of the Council to undertake Ministerial responsibility for co-ordinating Government policy on population matters in the United Kingdom. This announcement followed the Government's acceptance of the broad conclusions of the report of the Population Panel which was set up to consider the subject following the Report of the Select Committee on Science and Technology in July 1971.

New public bodies and offices established by legislation

(*a*) *The Health Service Commissioners.* The provisions in the National Health Service Reorganization Act 1973 for the establishment of Health Service Commissioners for England and for Wales completed the extension of the system for the redress of grievances in the field of the National Health Service begun by the enactment of similar legislation for Scotland under the National Health Service (Scotland) Act 1972. Sir Alan Marre started work as Health Service Commissioner for the three countries on 1st October 1973. The decision to combine the posts with Sir Alan's responsibilities as Parliamentary Commissioner for Administration accorded with a recommendation by the House of Commons Select Committee on the Parliamentary Commissioner for Administration. The Health Service Commissioner is empowered to investigate complaints from members of the public of injustice or maladministration arising from the actions of any of the 'relevant bodies' listed in the Act. These include the present Hospital Boards and Hospital Management Committees and, after 1st April 1974, the new Regional and Area Health Authorities and Family Practitioner Committees.

A Commissioner may not investigate complaints where there exists a right of appeal to a tribunal or a remedy by way of proceeding to any court of law. The Act provides, however, that he may conduct an investigation even if the complainant had such a remedy if the Commissioner is satisfied that in the circumstances it would not have been reasonable to expect the complainant to resort to it. The Act also excludes from investigation certain other matters including complaints against actions which in his opinion were taken solely in the exercise of clinical judgment.

The complainant will be able to address his complaint direct to the Health Service Commissioner. The Commissioner will not, however, normally investigate a complaint unless he is satisfied that the health authority concerned has had a reasonable opportunity

to investigate it and reply to the complainant but has failed to satisfy him.

(*b*) *Nature Conservancy Council.* The Nature Conservancy Council was established under the provisions of the Nature Conservancy Act 1973. It commenced to discharge its functions on 1st November 1973. It has taken over the nature conservancy functions of the Natural Environment Research Council and will also have responsibility for general policy towards endangered species. The research stations of the former Nature Conservancy have been retained by NERC which has formed them into an Institute of Terrestrial Ecology.

(*c*) *The British Library.* The British Library, established under the provisions of the British Library Act 1972, came into being on 1st July 1973 (SI 1973 No. 1125 (C.37)). The Act provides for the Library to be controlled by a public authority known as the British Library Board, the chairman and members of which are appointed by the Secretary of State for Education and Science, apart from one member who is appointed by Her Majesty the Queen. The new Library incorporates the Library Departments of the British Museum, including the National Reference Library of Science and Invention, the National Central Library and the National Lending Library for Science and Technology. British National Bibliography Ltd. and the Office of Scientific and Technical Information (OSTI) which is part of the Department of Education and Science will be integrated into the Library in 1974. The Board is required under the Act to manage the Library as a national centre for reference and study and to provide bibliographical and other services in relation both to scientific and technological matters and to the humanities.

(*d*) *Director General of Fair Trading.* The Fair Trading Act 1973 which came completely into operation on 1st November 1973 makes provision for the appointment by the Secretary of State of a Director General of Fair Trading, transfers to him the functions of the Registrar of Restrictive Trading Agreements and extends those functions to cover agreements relating to services. The Act also provides for the establishment of a Consumer Protection Advisory Committee and changes the title of the Monopolies Commission to the Monopolies and Mergers Commission. The Act confers on the Director General, the Advisory Committee, and the Restrictive Practices Court and the Secretary of State new functions for the protection of the consumer.

(*e*) *Manpower Services Commission and Agencies.* The legislation required to set up the Manpower Services Commission, foreshadowed in the article in the February 1973 edition of this journal, was enacted as the Employment and Training Act 1973.

The Act requires the Manpower Services Commission to make arrangements to provide employment and training services, formerly the function of the Department, in accordance with

policies approved by the Secretary of State for Employment. The Commission will assume responsibility (in the course of 1974) for the Employment Service Agency and the Training Services Agency which will both be established as separate statutory bodies.

Note

In January 1974 *a new Department of Energy was established under the direction of a Secretary of State to discharge functions in relation to energy resources previously carried out by the Department of Trade and Industry. As a result of the Ministerial changes involved the size of the Cabinet (including the Prime Minister) was increased to* 21. *The number of first tier Ministerial salaries in payment stood at the statutory limit of* 19 *and the number of first and second tier Ministerial salaries at the statutory limit of* 46.

Management Consultants in Government

We have from time to time published lists of management consultancy assignments commissioned by Government Departments. The last such list, covering the calendar year 1972, appeared in the May 1973 edition of MANAGEMENT SERVICES IN GOVERNMENT.

A list of such assignments commissioned during the calendar year 1973 now follows. The list excludes:

(*a*) Assignments in the National Health Service.
(*b*) Computer consultancy (including assistance with computer systems and programming).
(*c*) The employment of consulting staff, whether on secondment from their firms or not, to augment departmental teams.

Department	*Nature of assignment*	*Consultant used*
Cabinet Office	Analysis of social affairs programmes and the development and presentation of conclusions and recommendations	McKinsey & Co. Inc.
Civil Service Department ..	To provide OR assistance in a management review of the Scottish Office	Institute for Operational Research
	To provide OR assistance in a study of the use of government scientists	Institute for Operational Research
	To determine and appraise the organization of the library service in Whitehall departments	P-E Consulting Group Ltd.
Ministry of Defence	To advise on the reorganization of Command Ordnance Depot, Chilwell	National Materials Handling Centre, Cranfield Institute of Technology
Department of Education and Science	To study classification and indexing systems in the British Library planning secretariat	Association of Special Libraries and Information Bureaux
Department of Employment ..	Development of OR models to assist in locating training facilities	Logica Ltd.
	To evaluate the vocational assessment scheme at Bellshill Government Training Centre	Urwick Orr & Partners Ltd.
	To determine a programme and budget for the Training Services Agency	McKinsey & Co. Inc.
	To survey job vacancies in employment exchanges	Harold Whitehead & Partners Ltd.
	To assess the value of extended training courses for young people	Urwick Orr & Partners Ltd.
	Survey of group training schemes	Industrial Training Service
Department of the Environment ..	To make a study of bus route costing	Arthur Andersen & Co.
	To undertake a study of crowd control at the Jewel House, Tower of London	Binder, Hamlyn, Fry & Co.
	To study the placing of works contracts in the Property Services Agency	Mead Carney & Co. Ltd.
	To assist in constructing a subject index for departmental directories	Association of Special Libraries and Information Bureaux

Department	*Nature of assignment*	*Consultant used*
Department of the Environment *—continued*	A study of communications at the Department's Marsham Street Headquarters	Atkins Planning
	A survey of the effectiveness of the Building Research Advisory Service	Building Management and Marketing Consultants Ltd.
Department of Health and Social Security	Further work on the simulation of a pathology laboratory—validation exercise and first user application	Peat, Marwick, Mitchell & Co.
	Further development of OR modelling of the balance of care	Scientific Control Systems Ltd.
	To define service standards for the ambulance services, to devise monitoring procedures and to assist with their introduction	Orcon Services Ltd.
	To assist in a programme of work in the field of hospital logistics	National Coal Board Operational Research Executive
	To carry out a feasibility study and make recommendations for a depth study of care of the mentally ill	Nimrod Consultancy Services Ltd.
Royal Mint	An OR study of coin distribution	Robert Webster & Partners Ltd.
Scottish Office	A study of the organization and staffing structure of the Scottish Health Board Treasurer's Department	Peat, Marwick, Mitchell & Co.
	Marketing survey for prison industries	PA Management Consultants Ltd.
HM Stationery Office	Strategic study of HMSO warehouse and distribution organization	P-E Consulting Group Ltd.
Department of Trade and Industry	A study of the UK ship repairing industry	PA Management Consultants Ltd.
	A study of the UK carpet industry	PA Management Consultants Ltd.
	A costing study of marine survey work	Touche Ross & Co.
	Study of Industrial Estates Corporation's finances	Touche Ross & Co.
	To report on financial control in the National Research and Development Corporation	Peat, Marwick, Mitchell & Co.
	To study marketing prospects for off-shore cranes	International Management & Engineering Group of Britain Ltd.

Department	*Nature of assignment*	*Consultant used*
Department of Trade and Industry *–continued*	To study aerospace equipment marketing	GT Systems Ltd.
	A study of the origin and destination of passengers and baggage at airports	National Opinion Polls Ltd.
	To report on the Department's needs for management accounting information	Arthur Andersen & Co.
	To advise on the exploitation by British industry of engineering requirements for off-shore drilling	International Management & Engineering Group of Britain Ltd.
	To report on the impact on industry of Stage II of the Government's Prices and Incomes policy	Arthur Andersen & Co.
	To study the prospects for the commercial exploitation of the National Physical Laboratory ship tank	Atkins Planning
	To study programme assessment and market development in the control engineering field	Cremer and Warner
	To assist in the technical costing of a new marine diesel engine	P-E Consulting Group Ltd.
	To assist in the setting up of the off-shore Supplies Office	Mr. D. Casey
	To study metrication progress in the engineering industries	Mead Carney & Co. Ltd.
	A study of the implications for the UK of changes in the Japanese economy	Boston Consulting Group Ltd.

People Matter — People Differ

The Work of Behavioural Sciences Research Division

DR. E. ANSTEY, Civil Service Department

Introduction

BSRD was founded in October 1970 to provide research-backed advice to CSD on the wide variety of personnel problems associated with implementing the Fulton Report. Most of the professional staff are occupational psychologists who are trained and experienced in studying the behaviour of people at work. They have studied how people actually perceive and think and act, rather than how they would behave and think and act if they were no more than efficient machines. The outlook of the Division can be summed up in two short maxims, 'People matter' and 'People differ'.

BSRD is not interested in research for its own sake, but only in establishing a more informed basis for action. All 29 projects in hand have been started in response to direct requests by client Divisions or Departments. About a third of them are concerned with recruitment and selection; about a third with personnel management; and about a third in the field of organizational studies.

Recruitment and selection

In the main Executive Recruitment Competition for school leavers with prescribed A or O-level qualifications, the half-hour Board interview is decisive; and it is therefore vitally important that it should be as fair and efficient as possible. BSRD has helped the Civil Service Commission to introduce some worth-while improvements. First, we devised two short, objectively marked written tests, one of general intelligence and the other of figure sense, which are taken shortly before the interview. They provide objective information about a candidate's ability, to compare with his educational record. If, for instance, a candidate with only moderate A levels does surprisingly well in the tests, this suggests that he may have been held back by family circumstances, ill health, or poor teaching, which prevented him from doing as well at school as he might have done; but he still has high potential. The Board can explore these possibilities at interview. The Board takes due note of these scores—and follow-up studies have confirmed that they make sensible use of the information, not attaching too much or too little weight to it. This leaves the Board free to concentrate on assessing those personal qualities which can reasonably be assessed in

the course of an interview. To help them, a Rating Form has been introduced, on which each Board member assesses the candidate under seven different headings. The first heading, for instance, relates to the candidate's appearance and bearing—how favourable a first impression does he make? This is worth noting quickly to get it out of the way and prevent it from influencing other assessments as well, thus avoiding what is somestimes called 'halo effect'. The second heading relates to the candidate's ability to express his thoughts orally, which is something quite different from his quickness in the uptake and his reasoning powers, which are covered by headings 3 and 4. And so on for the other headings. After the interview, discussion by the Board of their ratings encourages the pooling of evidence and provides a basis for systematic assessment of the candidate, which reduces subjectivity.

Two-day training seminars have also been introduced, at which the objectives and techniques of the selection interview are described, but where the main emphasis is on practice interviews by each syndicate in turn with another syndicate offering candid comments on their performance of a critical but constructive nature. These seminars have gone down well, and the latest addition to them is a training film, *Facing the Future*, which portrays a specimen interview. The film illustrates the point that though each member of the Board has his or her own idiosyncrasies, the Board know their business well enough to be able to compensate for each other's weaknesses and arrive at a fair verdict.

Personnel management

In the field of personnel management, BSRD has participated in work on a package of which four interlocking components are better staff reporting, systematic appraisal interviews, development of career interviews and better training.

The new model Report Forms produced by an Interdepartmental Working Party (of which I was a member) in 1971 have been, or are being, introduced by all Departments. One notable advantage of the new form is that it starts with a clear statement to be agreed between the person and the reporting officer of what the person's main duties are. The reporting officer then says how successful the person has been in performing each of them. This section of the form is quite distinct from the subsequent description of the person's qualities, suitability for promotion, etc. Another advantage is that the form calls for a statement of the person's training needs, and whether he or she should be considered for transfer to another job at the same level.

The second component of the personnel management package is the appraisal interview, or job appraisal review. This title emphasizes that the person's performance is being considered in the context of the particular job he has been doing, and that the main purpose of the interview is to help him to improve his performance during the coming year. One of the clearest applications of the maxim 'People matter'

was the transformation in 1970 of the CSD outlook on appraisal interviews. In this year CSD Working Parties launched a positive blitz on the subject, discussed what form the new approach should take and started training courses at the College for departmental trainers. BSRD was commissioned to supervise the making of a film *The Man in the Job*, which was launched by Sir William Armstrong personally at a première in London on 1st November 1971. The film placed emphasis on the need for careful preparation by both parties before the interview, and on encouraging frankness by the appraiser combined with a problem-solving approach to difficulties, i.e. not telling a person what he ought to do, but first seeking his views and then discussing them with him.

Evaluation projects in seven Departments have shown that the new, more human approach seems to be paying off. In one Department, for example, 64 per cent of senior staff, ranging in rank from Deputy Secretary to Senior Executive Officer, have reported that JARs have brought to light staff problems of which they were previously unaware. Staff generally have welcomed not only praise but also candid criticisms from appraisers, and candour has been found not incompatible with the problem-solving approach, which also goes down well.

The third component of the personnel management package is the career interview, and the intention is to make such interviews more readily available in future. But apart from finding additional staff to carry out this work, it is necessary to ensure that the interviewers will have been given sufficient training to give them a good chance of success. BSRD has been conducting research into this, with emphasis both on the technique of sympathetic appreciation of an officer's career aspirations and anxieties, and on knowing very clearly the various practical limitations, so that interviewers give those assurances, and only those, which are likely to be borne out by events.

Since the Civil Service College was founded, great attention has been given to training in personnel management, with numerous courses for senior, middle and junior managers. BSRD has played its part in these courses, but its main contribution is likely to be in stimulating the proper evaluation of training. This research operates through the co-operation of the individual trainees, but the evaluation is not of them but of the courses in question.

For example, BSRD, in co-operation with Customs and Excise, has over the past two years been evaluating the effectiveness of two training courses in the Value Added Tax system. Action research into the effectiveness of the training was carried out first by devising objectively marked tests of understanding of various aspects of VAT, applying them to successive courses and seeking the reactions of trainees. There was immediate feedback of information from the tests, and discussion with the trainees. This was used to improve the course by removing ambiguities and misconceptions and strengthening the weaker sections. Then, two or three months after training, a random sample of the recently trained VAT officers has been invited to express their reactions

by means of a brief questionnaire and attitude scale to the relevance of the training received to the work they have been called upon to do. Any weaknesses thereby identified have been corrected.

Organizational studies

More than good personnel management is needed, however, in order for staff to give of their best. One of the most powerful methods of motivating people is to encourage them to participate in determining their objectives, and in the management and control of their own affairs. Effective participation is most likely to be achieved by pursuing the following objectives:

(*a*) That people are aware of the aims of the organization and how their own jobs are contributing to organizational objectives.
(*b*) That people know what is expected of them in their jobs, and have as much say as possible in how they carry out their work.
(*c*) That people are involved in decisions which they perceive as affecting them.
(*d*) That there is a good match between people's skills and abilities and the jobs they have to do, and careers available to them. This has implications for job content as well as recruitment and allocation.
(*e*) That jobs are defined in terms of what has to be achieved rather than the process by which this is done and that recognition is on the basis of this.

A style of management which tries to take account of these factors is management by objectives (MbO), which is currently attracting considerable interest in the Civil Service and on which BSRD is working closely with the Management Services Division of CSD. It is important to make every effort from the outset to evaluate MbO installations, to test how they are working out in practice and whether there are weaknesses which can be identified and put right. Evaluations should be concerned not only with the objective factors such as production, efficiency and costs, but also with the behavioural aspects of how staff feel about the changes in the methods of their work flowing from such installations. BSRD has produced a method of evaluating MbO appropriate for use in a variety of installations, large and small. It is based on the application of questionnaires, which were devised in consultation with both Staff Side and Management, and which can be supplemented by interviews and group discussions. The trial use of this instrument at certain MbO installations has shown that it can produce evidence of change in such areas as the organization of work, the use of staff time, the understanding of subordinates' needs, measurements of performance, delegation of authority and job satisfaction. Evaluation studies can provide insight as to how best to carry out, improve and refine an installation so as to achieve maximum success in its desired aims.

Members of BSRD are also helping in CSD teams studying other

opportunities for improving job satisfaction in a number of Departments and these have already come up with some useful findings. For example, in some types of clerical duties people prefer to work as a group, and this can be more satisfying and productive than traditional systems of work organization.

Complementary to the studies of job satisfaction among serving civil servants have been the BSRD studies of reasons for wastage from the Civil Service. The most intensive study has been of 60 Administration Trainees and Principals who have left the Service voluntarily during the past two years and who were given 'exit interviews' at BSRD. The objects of this interview were to explore the possible reasons for dissatisfaction and to establish the 'true' main reason for leaving which, in many cases, might not otherwise have become known. Leavers were generally interested in their work, satisfied with their working conditions and found their colleagues and immediate supervisor agreeable people. The prime causes of dissatisfaction included being employed in the wrong kind of job, or not being sufficiently involved in the work, or feeling that insufficient interest was being taken in them as people. About a third said that they might have been persuaded to stay if someone, a Personnel Officer perhaps, had investigated the main cause of complaint and acted to put the matter right. And these leavers were by no means sub-standard in efficiency; on the contrary, nearly all were reported as 'well up to standard' and about half as 'very good'.

At executive and clerical levels the numbers of leavers have been too great to make personal interviews possible, but a survey by questionnaire was made of staff who resigned from three large Departments during the first five months of 1972. Some findings were scarcely unexpected, for example, that one-third of all leavers (almost entirely women) left for domestic reasons. Others were less obvious, for example, there were few complaints of poor supervision. The main reasons for leaving were not dissimilar to those for ATs. More than half left because of some aspect of the work itself, or of the organization of the work, which could probably have been put right. These findings reflect only the opinions of leavers, and before we can come to any firm conclusion or make any recommendations based upon them we ought to take opinions from comparable samples of stayers.

Co-operation with Staff Associations

Finally, comes the vitally important topic of BSRD relations with the National Staff Side and Staff Associations. The expression of BSRD Reports is, of course, subject to managerial comment and their implementation is a managerial responsibility, but their findings are objective and not subject to alteration in accordance with policy considerations, any more than are the findings of research in the physical sciences. The BSRD wish is to co-operate as fully as possible with the Staff Side in all its work, and this implies consultation from the research planning stage right through to the issue of a Report. The Staff Associations have

provided much of the impetus towards methods of improved personnel management, such as setting up JARs, the experimental introduction of flexible working hours in certain local offices, and the first crèches for married women who wish to resume working in the Civil Service —a suggestion first put forward some years ago by a member of BSRD. We look forward to proposals by the NSS for research in areas where they feel the need is greatest. None of the new organization studies in progress or at the planning stage could conceivably take place without full Staff Side approval, support and, if possible, participation.

Book News

MANAGEMENT AND COMPUTER CONTROL

By T. R. Thompson. *Published by Gee & Co. (Publishers) Limited, 151 Strand, London WC2R 1JJ, price £9.50.*

General Managers on seeing a typical shelf full of books on computer systems and management may well plead to have it all in one volume, with technicalities written in a language they can understand. Mr. Thompson, in filling such a long felt want, has produced some 300 A4 pages of sound advice without a wasted word. His abilities are, of course, a matter of recorded history. A copy of his pioneering report 26 years ago to the Directors of J. Lyons & Company on the feasibility of using computers for office work (which led to the Lyons Electronic Office and the Leo Computer Series) lies in the Science Museum.

The author first discusses the information needed by management and how it should be detailed. He shows how the initiative should come from management to provide a systematic breakdown of its needs in order to provide the systems designer with what he requires. Next he describes the way in which a computer works, the method of specifying jobs for it and the preparation of a computer program. On the next subject, that of getting the right computer, he recommends a much more meticulous examination than many businesses commonly make of computer equipment capabilities in relation to the applications to be implemented. He also recommends a pretty tough line with manufacturers in fulfilling the system requirements.

Seven concepts common in business and administration are then set out and shown

as capable of being expressed mathematically. This is not to turn the manager into a mathematician but to show him the value of a mathematical approach and, therefore, that he must convey to the computer systems team as precisely as possible the realities behind the information he uses or requires.

The second part of the book begins with examples of common applications (payroll, purchasing, supplies, production, sales and administration). These systems are educational examples and check lists rather than skeletons to be used for applications in those fields. The important message is that the check list must cover the business undertaking, administration and so on, as a whole, not merely that part of it to be put on the computer. There follows chapters on staffing, including choosing consultants and on planning and controlling the computer project. With so much to cover Mr. Thompson can be excused changes to what-to-do from the more valuable how-to-do-it. But I was a little disappointed at the space devoted to controlling progress of computer project development.

I recommend this volume to would-be practitioners as well as its main target—those for whom computer systems are a tool, the preparation and use of which is delegated to their employees or contractors. Whilst of value both for business managers and those in public administration it is probably of greater use to the former. A consultancy company of considerable experience has commented that computer projects tend to be over delegated. A thorough study of this volume by senior managers will reduce the mystery which is the probable reason for this tendency and enable them to have a firmer grip on computer operations.

V. R. D.

A number of other management publications have been received recently from publishers. Space does not permit a full review, but a note of their title and cost is included below.

Handbook of O & M Analysis, by W. A. R. Webster. Published by Business Books Limited, price £4.75.

Organization and Methods, by R. G. Anderson. Published by Macdonald & Evans Limited, price 95p.

Organizational Management: Concepts and Practice, by S. R. Michael and H. R. Jones. Published by Intertext Publishing Limited, details of price not available.

The Application of Information Processing in Public Administration, a general report by Aimé François. Published by the International Institute of Administrative Sciences, Brussels, price B. Fr. 130.

Unit Cost and Division Reckoner, by R. M. G. Inglis. Published by Gall & Inglis Limited, price 65p.

The Effective Computer, by K. Grindley and J. W. Humble Published by McGraw-Hill Book Company (UK) Limited, price £4.50

Printed in England for Her Majesty's Stationery Office
by The Campfield Press, St. Albans